The British Medical Journal

JAN 4 1917
UNIV. OF ILLINOIS

The Journal of the British Medical Association.

INCLUDING AN EPITOME OF CURRENT MEDICAL LITERATURE.

WITH SUPPLEMENT.

No. 2919. SATURDAY, DECEMBER 9, 1916. **Price 6d.**

CONTENTS Page 1. **INDEX TO ADVERTISEMENTS Page 2.**

By Sir ARBUTHNOT LANE, Bart., M.S.

OPERATIVE TREATMENT OF FRACTURES.

SECOND EDITION. With 226 Illustrations, 10s.

ADLARD & SON AND WEST NEWMAN, 23, Bartholomew Close, E.C.

THE OPERATIVE TREATMENT OF CHRONIC INTESTINAL STASIS.

With additional Chapters by Sir JAMES MACKENZIE, Drs. JORDAN & MUTCH

THIRD EDITION. With 102 Illustrations, 10s. 6d. *net.*

1. NISBET & Co., LTD., 22, Berners Street, W.

CLEFT PALATE AND HARE-LIP.

With additional Chapters by Mr. CORTLANDT MACMAHON and Mr. WARWICK JAMES.

THIRD EDITION. With 58 Illustrations, 10s.

ADLARD & SON AND WEST NEWMAN, 23, Bartholomew Close, E.C.

By SIR WILLIAM BENNETT, K.C.V.O., F.R.C.S.

Crown 8vo. 5s. net.

INJURIES AND DISEASES OF THE KNEE-JOINT. With 34 Illustrations.

NISBET & Co.

Also,

8vo. 6s. FOURTH EDITION.

MASSAGE AND MOVEMENTS IN RECENT FRACTURES; SPRAINS AND THEIR CONSEQUENCES; RIGIDITY OF THE SPINE AND THE MANAGEMENT OF STIFF JOINTS.

With 23 Illustrations.

LONGMANS, GREEN & Co.

NOW READY. Demy 8vo. 5s. net (postage 4d.)

POVERTY AND ITS VICIOUS CIRCLES.

By JAMIESON B. HURRY, M.A., M.D., Author of "VICIOUS CIRCLES IN DISEASE."

This Illustrated Monograph discusses Poverty from a fresh aspect, and shows how greatly the study of Vicious Circles assists both the prevention and cure of this social disorder.

London: J. & A. CHURCHILL, 7, Gt. Marlborough St.

REGISTERED AS A NEWSPAPER.]

JUST ISSUED.

PART II.—VOLUME II.

MEDICAL CLINICS

OF CHICAGO

See SAUNDERS' Advertisement on Page 5.

FIBROSITIS.

COMPRISING

NEURITIS, MUSCULAR RHEUMATISM, &c.

By LL. J. LLEWELLYN, M.B.(Lond.), Senior Physician, Royal Mineral Water Hospital, Bath, and

A. BASSETT JONES, M.B.(Lond.), late Senior Hon. Surgeon Cardiganshire General Hospital.

London: WILLIAM HEINEMANN. 25s. net.

"..... This great masterpiece."—*Prescriber.*

"By virtue of sheer merit takes its place as THE classical treatise."—*Univ. Med. Record.*

"A searching study of one of the most difficult spheres of clinical medicine."—*Lancet.*

"..... Should take a place in the select band of classics."—*Indian Med. Gazette.*

"The appearance of so full and authoritative an account..... is a most welcome event..... should be widely read not only for the good sense and novelty of its contents but also because it contains a mine of information."—*Brit. Med. Journ.*

"The appearance of this exhaustive treatise at this juncture is singularly opportune, for while rheumatism..... is always with us, its prevalence among our troops makes it a matter of national concern."—*Med. Press and Circ.*

Now in Press by the same authors:—

"MALINGERING," or *The Simulation of Disease.*

Pp. viii. + 350, with 102 Illustrations. Price 7s. 6d. net.

DISEASES OF THE RECTUM AND ANUS.

By P. LOCKHART MUMMERY, F.R.C.S.

BAILLIÈRE, TINDALL & COX, 8, Henrietta Street, Covent Garden.

[COPYRIGHT.]

ON DISEASES OF THE LUNGS AND PLEURÆ.

Including Tuberculosis and Mediastinal Growths.

By Sir R. DOUGLAS POWELL, Bart., K.C.V.O., M.D.(Lond.), F.R.C.P., Physician in Ordinary to H.M. the King, etc.; and P. HORTON-SMITH HARTLEY, C.V.O., M.A., M.D. (Cantab.), F.R.C.P., Physician to the Brompton Consumption Hospital, etc.

Fifth Edition. 20 Plates (6 coloured), 57 Text Illustrations. Demy 8vo, 21s. net; post free 21s. 7d., abroad, 22s. 6d.

London: H. K. LEWIS & Co. Ltd., 136 Gower St., W.C.

LEWIS'S PUBLICATIONS.

Books for the Student and Practitioner.

See Advertisement Page 7.

London: H. K. Lewis & Co. Ltd., 136, Gower St., W.C.

FOURTH EDITION. JUST PUBLISHED.

8vo, pp. 260, *with 10 Illustrations, cloth,* 6s. *net.*

SQUINT:

Its Causes, Pathology and Treatment.

By CLAUD WORTH, F.R.C.S., Surgeon Royal London Ophthalmic Hospital (Moorfields), etc.

BALE, SONS & DANIELSSON, 83, Gt. Titchfield St., W.

Pp. viii x 492. Price 7s. 6d. net.

THE MORPHIA HABIT AND ITS VOLUNTARY RENUNCIATION.

By OSCAR JENNINGS, M.D. Paris, Fellow of the Royal Society of Medicine.

"It should be read by every practitioner in charge of a morphia subject."—*The Hospital.*

London: BAILLIÈRE, TINDALL & COX, 8, Henrietta Street, Covent Garden.

NEW EDITION. In Two Vols. 42s. net.

DEFORMITIES

INCLUDING

DISEASES OF THE BONES AND JOINTS.

A TEXT-BOOK OF ORTHOPÆDIC SURGERY.

By A. H. TUBBY, M.S.Lond., F.R.C.S.Eng.

Illustrated by 70 Plates and over 1,000 Figures, and by Notes of Cases.

2ND EDITION.—"The standard text-book in English on the subject."—*The Lancet.*

1ST EDITION.—"Standard work on the subject in the English language."—*Brit. Med. Journ.*

MACMILLAN & Co., LTD., St. Martin's Street, London, W.C.

[ISSUED WEEKLY

X RAYS AND ELECTRO-MEDICAL APPARATUS

We are BRITISH throughout and have always manufactured everything in London.

COILS	Our new line of MAMMOTH COILS can be relied on to give over 100 m.a. through the hardest tube.
COUCHES	Our 1916 Standard Model Couch combines absolute protection with the acme of convenience.
VERTICAL STANDS	Our new Vertical Stand is a worthy companion to the 1916 couch.
TUBE STANDS	UNIVERSAL TYPE for treatment. SIMPLEX and other types for radiography.
SCREENS	Fluorescent and Intensifying, fastest and best. Durable, Washable, Flexible, Non-curling.
OMNISTATS	The strongest & best form of Universal Apparatus—galvanic, sinusoidal, light, cautery, massage, surgical instruments.

HARRY W. COX & CO., LTD.,

SHOW ROOMS] **159-161, Great Portland St., London, W.** [AND OFFICES

Telephone: MAYFAIR 2687. Factory: GROSVENOR WORKS, WESTMINSTER.

NEW MODEL

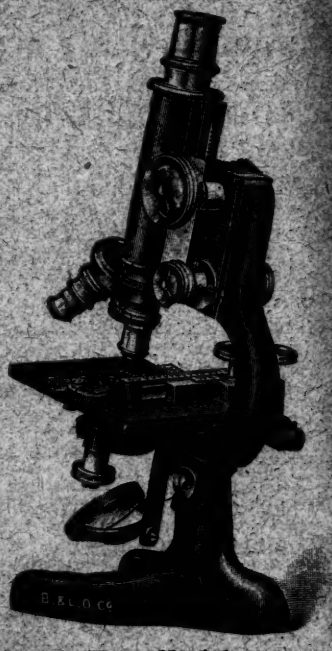
FS and FFS

and

Bausch Lomb MICROSCOPE

WITH SAFETY SIDE FINE ADJUSTMENT.

Catalogue No.	Objectives. Dry.	Objectives. Oil immersion.	Eye-Pieces.	Nosepieces.	Abbe Condenser.	Price. £ s. d.
FS 1	16 mm. 4 mm.	—	7·5×		—	6 5 0
FS 2	16 mm. 4 mm.	—	7·5×	Circular Double	—	7 1 6
FS 3	16 mm. 4 mm.	—	5× 10×		—	8 11 0
FS 4	16 mm. 4 mm.	—	5× 10×	Circular Double	—	7 7 0
FFS 6	16 mm. 4 mm.	—	5× 10×		1·20 N.A.	8 15 0
FFS 8	16 mm. 4 mm.	1.9 mm.	5× 10×	Circular Triple	1·20 N.A.	14 0 0



NEW ATTACHABLE MECHANICAL STAGE, No. 2116, £3 5 0

NEW 1/12 INCH OIL IMMERSION OBJECTIVE, - Fluorite N.A. 1·32, £10

We have sold over 114,000 Microscopes, which are in use all over the World.

Inspection invited at our Showrooms, or List "A 4" (Microscopes of all kinds, and Accessories) sent post free.

CENTRIFUGES OF PRECISION, SOLIDITY, AND EFFICIENCY. Bausch & Lomb New Models.

DOUBLE SPEED, complete with Hæmatokrit, Automatic Blood Pipette, two Sputum Tubes, in addition to two-arm Sedimentation Attachment, with one Graduated and one Ungraduated Tube, £2 1s. 0d. SINGLE SPEED, with Sedimentation Attachment and two Tubes, £1 11s. 3d.

Descriptive List "Z14" (Centrifuges) on application.

Also MICROTOMES, PHOTOMICROGRAPHIC and DRAWING APPARATUS, PROJECTION APPARATUS, &c.

TRADE MARK.

Bausch & Lomb Optical Co. Ltd.

Contractors to British, Indian, Colonial & Foreign Govts.

Agents for Bausch & Lomb Optical Company, of Rochester, N.Y., U.S.A.

37-38, HATTON GARDEN, LONDON.

OUR INSTRUMENTS MAY BE OBTAINED THROUGH ALL DEALERS.

An Address

ON THE

WORK OF THE NATIONAL MEDICAL RESEARCH COMMITTEE.*

BY

SIR CLIFFORD ALLBUTT, K.C.B., M.D., F.R.S.,

HONORARY COLONEL R.A.M.C.,

PRESIDENT OF THE BRITISH MEDICAL ASSOCIATION.

GENTLEMEN,—To dwell upon the large and profound changes which, even in my lifetime, have transformed the art and science of medicine would make a long story. But if, as you were good enough to suggest, I offer you some brief narration of the establishment and work of the National Medical Research Council and Committee, I shall illustrate thereby certain chief features of the new development. When some of us were consulted, not on the creation or management of a National Health Insurance but on certain of the scientific bearings and effects of the measure, we were rejoiced to find in the Minister who introduced it a far-seeing conviction of the opportunities of the Act for rekindling, reinforcing, and expanding that newer and wider life of medicine of which I have spoken.

The new life of medicine consists mainly in the advance from methods of description only to methods of description and analysis, an advance which, if pre-eminent in our own day, did not, of course, arise with us. This advance may be illustrated by the like reanimation of the methods of "natural history" by those of biology. By analysis we penetrate, below our observation of superficial likenesses and unlikenesses, to a closer and more experimental recognition of deeper affinities. In this way we attain to larger and more subtle appreciations of biological series, and so of causes, both proximate and remote. This movement, elaborate and exacting as its claims may be, is not only of infinite value in the functions of medicine, but indeed is of the essence of all technical art. The remonstrance, still not infrequently heard, that fiddling with instruments of precision is blinding us, or narrowing our view, on the side of clinical description, seems to me to have in it but little, if any, justice. Pedants there have been in all times and in all callings, but surely we, who champion scientific medicine and the establishment of quantitative upon qualitative methods, may ask in reply how it was that it remained for the recent scientific phase of medical history to distinguish clinically such maladies as those depending upon excess or defect of thyroid efficiency, many of those depending upon the chromaffin system, the two series of symptoms but lately distinguished as typhus and enteric fever; and so forth: distinctions open to the naked clinical eye but which nevertheless awaited the acumen of physicians of our day. At the same time, true it is that the arming of the naked clinical eye with instrumental means of observation, and, in therapeutics, the addition to our means of large and costly plants furnished in great part by the applications of modern physical science, have made what we call general practice, if it is to depend on the unaided labours of the individual practitioner, so exacting in time and skill as to be almost impossible. Yet, after all, personality goes, and must go, for as much as ever it did. How then are we to get over this problem of piling ever new claims upon the time and skill of the family physician with an abiding regard for the personal relations between doctor and patient? The sick man will resent, and reasonably resent, being deprived of these intimate and human relations of acquaintance and sympathy, and being committed to the colder benefits of a repairing manufactory. His malady would have no beginning and no history; the several specialistic interviews would be as pearls without a string. No machinery can make us forget the incalculable influences of the family physician; his intimacy with the earlier and later history of his patient, and the phases of his case; his wise friendship in times of personal suffering and family trial, his sagacious hopes and encouragements. All these and such influences are of the essence of cure.

How, I repeat, is this dilemma of pathological elaboration on the one hand and personal co-operation and sympathy on the other to be solved? First, by continual increase of the public, impersonal, preventive, side of medicine; secondly, by organized research to provide for the medicine of the future; thirdly, by arming the family physician with every reasonable resource of laboratory and consultative assistance which he may need.

Now during the last fifty years preventive medicine, in the State and Municipal sense—Public Medicine, as we call it—has made a considerable growth. The salaries of medical officers of health in all ranks of the service are too poor, and their increases during individual service too small, too capricious, too subject to illiberal local wrangling, and again the professional prizes too few, to attract the ablest men into public medicine. The lawyers who draft Acts of Parliament secure for their own profession—as county court judges, stipendiary magistrates, and the like, spheres of work certainly of not greater importance or difficulty—salaries and pensions of twice the amount, and protected against factious carping and paring. Still, under many disadvantages, and largely by the unrewarded public spirit of medical men, our system of public medicine is on the whole being fairly and soundly built. As regards our third requirement, the establishment throughout Great Britain of clinical laboratories, such as to be within the reach, and equal to the needs, of general practitioners in all districts, save perhaps the most remote, a provision I have fervently advocated for many years, our progress has been very tardy and imperfect. It is true the increase of the few university and municipal laboratories has done something for this end, but locally, incidentally, and fitfully. It is an open secret that Mr. Lloyd George, with his usual sagacity and ardour, not only saw this lack very clearly, but also was working out certain comprehensive schemes to supply it, when the calamity of the great war crushed this and many another, beneficent project. Happily, before the war there was just time to establish the second of the institutes of which I have spoken; namely, an organ of research, a systematic means of investigating disease with a view to the greater medicine of the future. To carry all the opportunities of the realized medicine of to-day to every considerable district in Great Britain will be a more costly adventure; it will mean not only the positively large, if relatively small, outlay of £120,000 a year at least, but it will be necessary also to train up for this function a school of peculiarly equipped clinical pathologists.

However, to establish and continue a school of medical research, an annual grant of about £60,000 was set apart for the Research Committee; although national adversities have since cut down some of the revenue of the Committee, and many of the proposals for expending it profitably. On the other hand, it was fortunate that before the war the Committee, under the able direction of Lord Moulton, had so far appointed the staff and organized its duties that, on the outbreak of it, the Committee was enabled to offer much assistance to the Medical Department of the War Office. As the Minister felt assured that there would be no difference of opinion in the Advisory Council as to the devotion of all the resources of the research organization to the service of the war he did not think it necessary at a time of strain to call a special meeting of the Council. And I may venture to add that Sir Alfred Keogh, Director-General A.M.S., has more than once made generous acknowledgement of the assistance of the Committee, which in its turn has to express to him its gratitude for much encouragement and many advantages. Of the surgical researches of Sir Almroth Wright in certain military hospitals this audience is no doubt well aware. And happily the duty of the Committee and the furtherance of its special purposes have not been divided. We now recognize that the occasions and events of the war have given opportunities for disciplined study and for consistent and extensive observation such as to have carried forward research in certain subjects towards results which in time of peace would have been obtained far more slowly, if at all.

I need not take up your time with the details of the initiation of the Research Council and Committee, nor of the conditions and instructions thereupon; I will quote parts of one sentence only: "the field of research is not limited, and is to . . . include . . . all researches bearing on health and disease, whether or not such researches have any direct or immediate bearing on any particular disease or class of diseases"; and so on. That is to say,

* Read at the annual meeting of the North Staffordshire Medical Society.

the work of the research authority is to be directed not only to temporary utilities but also to the creation of the medicine of the future.

And we have for the Advisory Council and the Committee even a wider ambition than this. Gradually, as it wins the confidence of the world of medical science, not by drill nor by the thraldoms of a formal institution, but by the natural ascendancy of merit, by first-rate thinking and achievement, it should lead, concentrate, and inspire the manifold activities of medical research throughout the kingdom.

The first question of means which we had to decide was whether we should use our grants to co-ordinate, to strengthen, and to fertilize the many and various places of research in the universities and technical schools of Great Britain, or should devote the whole of our resources to the creation of a large and wholly independent research factory in London. My own prepossessions were in favour of the former alternative, others of us leaned to the latter. On both sides there was much to be said; more than I can now repeat or fully indicate. But upon certain arguments in favour of at least some kind of central hospital for research I may touch briefly, arguments which, indeed, had led us ten years ago in Cambridge to establish a research hospital independent of the Addenbrooke's—namely, that in a general hospital a certain routine of daily management is hardly variable; also that patients must be discharged, or allowed to come and go, independently of any courses of observation and experiment; and again that even in chronic cases they must be submitted to immediate and continuous therapeutical and other technical interferences which baffle the stricter methods of research. Furthermore, in chemical and other problems of medical research, the services of experts of various orders, who are not on the staffs of general hospitals, are continually called for; moreover the intricacy of research funds with charitable funds would be more or less inextricable. Here and there, as at St. Mary's, a hospital may be able wholly to surrender a couple of wards for research purposes, and to place them at the disposal of an independent research staff not primarily concerned with healing the inmates; but few hospitals have the room or the conveniences to admit such a rule within a rule. In a research hospital the system and conditions of admission are so drawn up as to avoid these perplexities.

One more argument I will quote—namely, that the miscellaneous mass of research reported and collected from all quarters must, if any clear, consistent, and permanent results are to come of it, be revised, appreciated, and controlled by experts of the highest competence, such as those we have secured; and these controllers must obviously have a house and laboratories of their own. For these reasons, and some others, it was decided by the Committee and the Advisory Council to divide the grant and to devote so much of it to a central department in London as would not cripple its means of subsidy for research elsewhere. For this end the hospital at Mount Vernon, a building well suited to the purpose, was purchased. Thus a portion of the grant was set apart for a comparatively small but highly efficient central research hospital where certain scheduled diseases could be studied intensely and controls carried out, and the rest devoted to inspiring, strengthening, and extending research in all and any of those institutions throughout Great Britain which should satisfy the Committee of full competence for the work. All the larger and more important of these centres have been visited more than once by members of the Committee, and consultations held with their chiefs. In every centre the proposals of the Committee have been cordially received, while on the other hand the Committee in its turn has received much valuable aid and information.

The Statistical Department must of course necessarily be centralized.

The names and distinctions of all the senior and of many of the junior staffs are probably well known to you, and justify themselves. The hospital at Mount Vernon, purchased by the Committee for its central clinical and laboratory research, has since been required by the War Office, and the military medical staff there is now engaged in the investigation of the cases which I may equivocally allude to as the "soldier's heart"; Sir William Osler, Sir James Mackenzie, and myself being the consulting officers. Much good work on these problems, both pathological and therapeutical, is being done under the supervision of Dr. Thomas Lewis, who has now accepted a position upon the permanent scientific staff of the Research Committee. Owing to the exigencies of the war this staff has been changed from time to time, but Captain John Parkinson, formerly with Sir James Mackenzie at the London Hospital, Major Meakins of the Canadian Army Medical Corps, and other officers, have done a great deal of good work; first, in invaliding out of the army men with permanent heart affections, and, secondly, in the study and treatment of the cases of so-called "irritable heart."

These patients are first tested by systematic exercises carried on under medical supervision, and then treated by these and similar methods. By these methods, instead of some weeks or months of indefinite invalidism, the cases are cleared up in a month or less; those patients who are not likely soon to be fit to return to service being drafted out, and the return of the more fit expedited. Although this work is rather for utility than for research, yet much research into the nature of these troublesome cases is involved in the system. By means of orthodiascope, polygraph, string galvanometer, pharmacological tests, and so forth, much information of a strictly scientific kind is obtained. Digitalis is found to be useless, or without any good influence, in these "irritable" heart cases, and is, as a rule, discarded. Moreover, Mr. Barcroft of Cambridge has applied his well-known methods of gas analysis to determine the hydrogen-ion concentrations of blood, or at any rate the balance of its reactions, in these cases; researches which suggest that the explanation of the breathlessness may prove to be due to a deficiency of certain salts in the blood of metabolic origin.

I have said that many departments of the comprehensive schemes carefully planned out by the Research Committee before the war have been almost entirely held up. Not only has the staff been surrendered, but everywhere the pathological laboratories are depleted of expert assistants. Too many skilled laboratory attendants, instead of being secured for military laboratories, have been enlisted as combatants. For instance, research into the subject of rheumatic infections—in which I am warmly interested as being a peril of young life almost as dire as the tuberculous—into thyroid perversions, oral sepsis, diabetes, have been, wholly or in great part, suspended for the present. Some work, however, is in progress on the study of acetonuria; and, more generally, on the urinary excretion of acid, the control of respiration by the mid-brain, and the sensitiveness of the respiratory centre to acidity.

One of the chief original duties of the Research Committee—the investigation of the incidence of phthisis upon particular occupations and industries—has received a good deal of attention. A large number of visits have been paid to boot and shoe factories, leather and hide works, and printing shops. In this research the Statistical Staff also has taken a considerable part. A report on the boot and shoe industry is already published. The evil elements in bad ventilation are being detected, and the changes of the respiratory mucous membrane under changes of temperature recorded. For this and certain other trades special sanatoriums are recommended, so equipped that the patients can be set to work, each on his own trade, under the direction and vigilance of the physicians in charge. Like inquiries are on foot in Birmingham, Bradford, Leicester, Manchester, Sheffield, Cardiff, and Belfast.

At Midhurst, and again under Dr. Gauvain at Alton, and at the Peamont Sanatorium (Dublin), researches are on foot to determine the value of tuberculin treatment. Using the clerical and visiting assistance provided by the Committee, Dr. Bardswell has completed an extensive report, to which the Clinical Prize of the College of Physicians has been awarded. It is hoped that this important manuscript may soon be published. On the types of bacilli in tuberculous infection, especially on the occurrence of bovine and human types respectively in children, work is in progress in the Dublin and Edinburgh pathological laboratories under Professor McWeeney and Dr. A. P. Mitchell; while Dr. Stanley Griffith, at the Field Laboratories in Cambridge, is continuing his well known studies upon the types, the attenuations, and the mutations of the bacillus, and upon bone and joint tuberculosis. Important work on a method much in need of

development—namely, radiography in the diagnosis of phthisis—has had to be suspended.

As regards purity of milk supply, the Committee, with the consent of the Local Government Board, invited Dr. Janet Lane-Claypon to prepare the excellent monograph and critical review of this subject which has had so cordial a reception by our profession; and undertook to pay her fee and the costs of publication. This monograph, it is hoped, may be the first of a series. At Reading Dr. Williams is studying the tuberculous infection of pasture lands by the dung of tuberculous cattle or otherwise. Two cows, apparently healthy in all respects except that tubercle bacilli are contained in their dung, have now been obtained from different sources, and careful experiments, with suitable scientific controls, are being carried out on pastures hired by the Committee. Methods of electrical purification of milk are still under investigation at Birmingham by Sir Oliver Lodge and Professor Leith.

I must not forget the pressing need of farther research on dust inhalation, for which a scheme has been drawn up. You are aware, no doubt, that one seat of these investigations is your own district; that Dr. Mellor is investigating the chemical and physical characters of dangerous dust particles, and Dr. Barwise, in Derby, the pathology of gritstone phthisis. For the farther investigation of this subject and on some aspects of the hygiene and the perils of mining, the Committee has placed the whole-time services of Dr. Mavrogordato at the disposal of Dr. Haldane, whose fruitful researches for the Home Office are too well known to need my commendation.

Some other lines of research, more or less actively in hand under the auspices of the Committee, I must do no more than indicate. For example, in London and the provinces, researches are on foot on the ductless glands, on bacilluria, on diphtheria, on the lipoid contents of organs, on the so called status lymphaticus, on the Binet scale for the blind, on the grading of alternative mental tests, and so on. On the surgical side much attention is being given to gunshot wounds of the chest, to skin-grafting on wounds, and to wounds of the brain and of the spine; while a heterogeneous collection of cases under such descriptive names as "shell shock," are, with other functional nervous disorders, under the charge of Professor Mott at the Maudsley Hospital, Denmark Hill, of Major Rowe and Dr. Rivers of Cambridge at Maghull, Liverpool, of Dr. Head at the London Hospital, and elsewhere. At the Neurologists' Conference in Paris, last April, Dr. Head represented the Research Committee, and recommended a certain scheme for the record and organized study of neurological cases. In this department the Committee has been fortunate enough to secure the eminent services of Dr. Sano of Antwerp, who, expelled from his own laboratory, now gives his whole time at Claybury and Denmark Hill. The brilliant work of van Gehuchten, of Louvain, recommenced under like circumstances at Cambridge, was unhappily cut short by his lamented death not long afterwards.

One of the earliest undertakings of the Committee, a scheme of work on rickets, including a study of tetany, and of the thymus and the parathyroids, has been delayed. On another grievous disease however—rheumatoid arthritis—Dr. Strangeways, on a part-time grant, has continued to prepare his reports upon the large bulk of material which for some years he has been collecting at the Cambridge Research Hospital. His report on the morbid anatomy is now being completed by another on the histology of the disease.

I think it only remains for me to say in this part of my address that in one way or another, by grants, plant or personnel, pathological assistance has been given by the Committee to about thirty of the chief military hospitals. Much of the scientific work thus assisted in these centres is no doubt of a routine kind; but in time of war it is impossible to distinguish very closely between routine and research. Indeed, it is often in the course of practical experience that new problems and new lights appear which in the laboratory would never have arisen.

[Much more of my discourse was given to a sketch of the outlines of the many and various researches carried on by the staff of the Committee into the nature of disease, and to recognition of many more of its investigators, nearly all of them for full or part time on the staff, or offering facilities as heads of laboratories. As however the report of 1915–16 is now published, it is needless to reproduce all those paragraphs. In their place let me attempt a brief survey of the general trend and character of the work completed or in progress.

During the war the diseases which command attention are, of course, those belonging especially to armies in the field; namely, the poisoning of wounds by many microbes, aërobic and anaërobic, and the effects of associated conditions, such as the tryptic and antitryptic. Closely upon them follow such inward infections as the various diarrhoeas and dysenteries, including summer diarrhoea and asylum dysentery, their causes, symptoms, and carriers—men, water, flies, etc.—with the corresponding methods of prevention and counteraction, and so on. The great, almost complete, success of vaccination against the several kinds of typhoid fever, and of prophylactic serum in tetanus, have received the verification which confirms the universal impression of all observers; while a new method of disinfecting ships without injury to fittings or decorations, and at a small expense, has proved invaluable in this part of the medical service. On the diseases of civil life, which in the long run are even more destructive to mankind, on such diseases as tuberculosis, rickets, rheumatic fever, diabetes, rheumatoid arthritis, etc., some steady work is in progress, but under the disadvantages of diversion of individual energies, and the depletion of laboratories for the combatant and medical services. Cerebro-spinal fever, "trench fever," "frostbite," animal parasites, have been under continual study.

To make a summary of the methods is a more difficult task. By bacteriological methods, by chemical study, as of colloids, lipoids, alkaloids, enzymes, hormones, catalysts, and of toxins, protein and other, of amino acids, of immunity phenomena and anaphylaxis, of the relation of the saline, carbon dioxide, and other constituents of the blood to muscular, cerebro-medullary, and other functions, the secrets of disease are being besieged on many lines, frontal and flanking—lines which it is to be hoped are on the whole convergent. Thus with some dismay we perceive that to organize a campaign against disease from all these directions seems to presume in the inquirer accomplishments which no one man can command. No man can be a clinician, a pathologist, a physiologist, a chemist—and chemistry has now its physical as well as its physiological side — and a physicist; scarcely, indeed, can he master any two of them. This is true; and the need is met, in part of course, by division of labour—but only in part.

Many men, clerks of science as one may call them, work assiduously and intensely at multitudinous small points, and, seeing each his own point and little more, yet do excellent service in accumulating facts under the direction of other and maturer minds. Nevertheless, if a young scientist has the ambition to excel in pathological research he must try ever more and more to see something of the whole. For example, it may be that Ehrlich's hypothesis is now failing to explain all the facts; but if this be so, the hypothesis has been of invaluable service in giving a large imaginative conception of morbid processes, a breadth of view which has lifted up the ideas of all who have followed him. But Ehrlich could not have reached this elevation of outlook had his vision been confined, let us say, to bacteriology. Like Pasteur, he had at least some mastery of the more general ideas of chemistry and physics.

By its hierarchy of workers and choice of methods the Research Committee fosters this breadth of view as well as inquisitiveness and accuracy in detail. If then all research into the nature of disease must radiate from physiology, for all disease is but a perversion of the normal, or a declension from it, the investigator, if he is to be successful, must have some mastery of chemistry and physics also. To the physiologist, indeed, the animal body is but a congeries of microbes, which, from such simple aggregation as in the sponge, becomes so differentiated and combined, both in structure and function, that in the mammalia perhaps no group of cells has escaped construction into organs, as these again are organized in the whole. And each kind of these cell microbes has its own product—that which physiologically we call a secretion or excretion, pathologically a toxin; the difference being one of relative utility. The production, for example, of ptyalin from a salivary microbe is analogous to that of the toxin of a bacterium; the enzyme of a septic organism to that of a pancreatic cell. Trypsin is useful or mischievous according to the sphere of its occupation.

As it is the precious service of the artist or moralist to lift the ideas of mankind into the highest spheres which thought and imagination can reach, or even vaguely discern, so, as one William from Ockham has told us, it is the property, not always delectable, of science to reduce phenomena to their lowest possible categories. Science now boldly asks what evidence we have—evidence likely to resist analysis—of any "suprachemical" mode or modes of energy. Thus it is that no physiological research can be exhaustive unless the student be in possession at least of the ruling principles of chemistry. If not, he may be working on a false bottom, with the chemist mining below him. But this is not all; far from it. Below chemistry comes, as I have said, the physicist, also driving his adits under the chemist, the physiologist, and the pathologist. We have scarcely ceased to admire the phenomena of phagocytosis, and distributed to this function the language of war, when the physicist comes in and shows signs of sweeping the whole "biological" conception of it down into his own category. He tells us, or is threatening to tell us, that these phenomena may be explained by the laws of surface action. And into the same net he is prepared to gather "opsonins," "agglutinins," and other phenomena which hitherto had lain quietly in the lap of the biologist. So again, what is to be the interpretation of catalytic functions? What of enzymes? That many catalysts—bodies that is which quicken the rate of molecular disintegration—are inorganic, we know. How much of catalysis then is reduceable to the category of physics? We say sometimes that as in chemistry we expect quantitative relations between cause and effect to be calculable, as, for instance, in the case of certain alkaloidal products of bacteria, and presume therefore that such a function as anaphylaxis, wherein quantitative proportions seem subordinate, must be "suprachemical"; yet do we feel sure that, even here, enzymic and catalytic processes may not prove to have physical explanations as well as physical conditions? We admit that if most enzymes are protein, such is not the case with all of them. Again, the action of lipoids and recent researches upon adsorption carry us down again past chemistry proper to the ground floor of physics. Many strange perversions of the mind of man are explicable by purely physical relations between the nerve cell and some accessory substance outside it. Consider again the drop we have had from animal and vegetable food, from the "life-giving blood," from the store of courage we were taking in when we ate the heart of a lion, to nourishment by amino acids! One of the most wonderful experiments of the laboratory is the continuing function of the separated heart, fed only by Ringer's, or Ringer and Lock's, fluid. In like manner some kinds of dyspnoea seem to be due simply to a faulty crasis of the salts of the blood And at the other end of the scale we have the relations between bacteria and the amino acids, and the present need for an advance of chemical bacteriology to the commanding position already attained by its morphology.

In medical research then we shall not regard in one set of cells the liberation of hormones as an exceptional endowment, or in another the liberation of a stimulant or catalytic product, and so on; we shall realize that, variously differentiated, some such effluence is the endowment of all cells, from the simple ptyalin of saliva to the toxins of pyogenic or anaërobic bacteria, the ricin of castor-oil or the juice of the poppy; each kind of cell having worked out its peculiar function. The amazing thing is the infinite variety of cell effluence in the animal and vegetable world; a variety presumably potential in the simplest organisms. If for a moment we can imagine in the animal body the secretion of every several kind of cell to be tinted with its own colour, and the tissues to be transparent as glass, we should see from every organ, even no doubt from bone itself, the peculiar dew of each streaming into the passages of the body, mingling into a general iridescence, and yet each, selecting and selected, ministering to its peculiar service of nourishment, integration, reinforcement, degradation, or elimination.]

My desire in this address has been to give some idea of the dimensions and scope of the work in progress by the Committee, and generally in the field of medical research, and some sense of the large and intense vitality of the movement and of the army of workers. In the next twenty years, as in the last twenty, medicine will, we trust, be so enlarged and illuminated in many directions that the art and the science will again be transformed. And upon these new conceptions, new discoveries, and new auxiliaries will be based a new therapeutics to give us a command over disease as great again as that ascendancy which already has distinguished our own generation.

One pleasant duty remains—namely, to express to you our grateful sense of the really brilliant services, both in organization and in intellectual aid and counsel, of our secretary, Dr. Walter Fletcher. The Committee's report for 1915–16 is shortly to be published. Both from this and his previous report I have borrowed largely, and in many passages have not hesitated to make direct quotations.

In conclusion, gentlemen, I owe you sincere thanks for your indulgent attention to an address which owes whatever of interest it may contain to its subject, and little or nothing to the speaker.

Abstract of a Lecture
ON
A CASE OF ARSENIC CANCER.

DELIVERED AT THE MIDDLESEX HOSPITAL, 1916.

BY

SIR JOHN BLAND-SUTTON, F.R.C.S.

SURGEON TO THE HOSPITAL

"AUXETICS" is a term applied to chemical and physical agents capable of stimulating epithelial cells to unwonted activity. In pathology the term is more particularly applied to agents that can provoke such changes in epithelium as to predispose them to become cancerous. It has long been known that soot, lime, pitch, tar, arsenic, and caustic soda are auxetics in the stricter sense. To these have been added during the last twenty years *x* rays and radio-active substances such as radium. Chronic ulcers caused by burns and scalds are also liable to become cancerous.

Quicklime is indirectly an auxetic; it burns the skin, and chronic ulcers caused in this way sometimes become cancerous. This change has been noticed in scars on the conjunctiva left by lime burns. Davis published some curious evidence connecting lime with cancer of the cheek occurring in the natives of the Philippine Islands who chew betel nut. This nut is the fruit of the betel palm; slices of the fruit are dried, wrapped with a pellet of lime and an aromatic like cardamoms, or turmeric, in a leaf of the betel vine. This mixture is called buyo. When chewed buyo causes a copious flow of red saliva that dyes the lips and gum, but blackens the teeth. It is supposed to sweeten the breath and stimulate digestion. The practice of chewing betel nut is common in the Philippine Islands. Cancer frequently attacks the mucous membrane of the cheeks of men and women who chew buyo. The natives attribute the disease to buyo chewing. Davis considers the lime to be the essential cause. The lime used for buyo is obtained by burning the shells of molluscs.

Some of you may remember that I showed you, about three years ago, a forearm amputated on account of an extensive cancerous ulcer. The man, aged 69, to whom the arm belonged, was employed to wash telegraph cups in a solution of caustic soda. One day he splashed his arm with the solution, and this caused an ulcer; it never healed. Two years afterwards he came to the hospital with a typical cancerous ulcer, enlarged lymph nodes at the bend of the elbow and in the axilla. The lymphatics along the median basilic vein were so permeated with cancer that I dissected them out like solid cords. On microscopic examination, the tissue around the edge of the ulcer had the usual characters of squamous celled cancer and a lymph node from the bend of the elbow was stuffed with similar material.

The dermatitis caused by *x* rays and radium is, in essence, a chronic ulcer, and, like chronic cutaneous ulcers in general, becomes, by slow and insensible stages, cancerous. As a result of *x*-ray treatment a rodent ulcer may become transformed into a squamous celled ulcer. A woman, aged 50, under my care had an ulcer involving the skin of the lower eyelid. The ulcer was excised and examined microscopically; the appearances were those

characteristic of a rodent ulcer. A year later ulceration recurred, and received energetic *x*-ray treatment for two years. The appearance of the ulcer changed; its edges became raised and hard. The *x*-ray officer became dissatisfied, and asked me to excise the ulcer. This was done, and on examination the new ulcer presented the characters of squamous celled cancer. Other surgeons have had similar experience.

I chose this subject for the lecture to-day because of a chance that enables me to show you an unusual example of what is called arsenic cancer.

A woman, aged 60, came under my care in the hospital with a large ulcer just below the left knee; it had the usual signs of cancer of the skin. In shape and position the ulcer so resembled a patch of psoriasis that I instinctively uncovered the right leg to see if there were any patches of psoriasis. The scaly, onion-like patches peculiar to this disease were present on her legs and elbows (Fig. 1). The following story was elicited:

FIG. 1.—Cancer arising in a patch of psoriasis on the leg of a woman aged 60. (From a photograph by Mr. M. C. Sarkies.)

For thirty years she had suffered from psoriasis, and during this period taken more or less continuously arsenic in the form of liquor arsenicalis. In 1913 a pimple appeared at the lower border of a scaly patch on the skin, just below the patella. This pimple gradually became an ulcer that was frequently scraped and cauterized. In spite of this treatment it increased in size; in 1916, when she came under my care, it had become a typical cancerous ulcer as big as the palm. There were enlarged lymph nodes in the groin. On August 23rd I removed the lymph nodes from the groin, ligatured the common femoral artery, resected the upper two inches of the internal saphena vein at its junction with the femoral vein, and amputated the limb through the middle of the thigh.

Tissues from the edges of the ulcer had the microscopic characters of squamous celled cancer, but there were no cell nests. The big lymph nodes from the groin were examined and found free from cancer, but they showed the changes common to nodes enlarged from septic infection. The patient made a quick and satisfactory recovery after the amputation.

Cancer of the skin covering the trunk is unusual, but it is common on the skin of the face and limbs, and always arises in some pre-existing lesion, especially a chronic ulcer. In the case of arsenic cancer, the order of events is somewhat in this style: Arsenic taken internally for a long time—years—leads to thickening (keratosis) of the skin, especially on the palms and soles. These thickenings crack and allow bacteria to enter and infect the skin; in rare instances these chronic linear ulcers become cancerous. Psoriasis is an intractable skin disease for which arsenic, especially in the form of liquor arsenicalis, was regarded as a specific.

A remarkable case has been reported in which a cancerous ulcer appeared in a patch of psoriasis on the skin of a finger under a wedding-ring. The patient had taken arsenic (R. J. Pye-Smith). It is said that this form of cancer does not infect lymph nodes, and the investigation of inguinal lymph nodes in my patient supports this statement. Let me conclude the lecture with a parable.

The dead trunk of a pollarded willow stood in a hedge-row bordering a busy highway. Dust, conveyed by wind, filled a depression in the head of the willow; a gooseberry bush flourished in this scanty soil. It is probable that a bird had eaten ripe gooseberries and then muted excrement containing the seeds in the soil on the crown of the willow. The seed sprouted, took root, became a bush, and bore fruit. The woman with cancer at the knee had, with great faith, swallowed liquor arsenicalis at intervals for thirty years with the hope of curing her psoriasis, until one day a crack appeared at the edge of one of these curious skin patches, and in a fortuitous way the germs of cancer entered, took root, and led to the formation of a large, stinking, cancerous ulcer. Some day the cause of a cancerous ulcer arising in a patch of psoriasis, a lupus patch, or in a chronic ulcer left by a burn will admit of an explanation as simple as the presence of a gooseberry bush on the head of a dead willow, but of this we may be sure: Many will see more chronic ulcers that have become cancerous than gooseberry bushes growing, and bearing fruit, on the summits of dead willows. There can be little doubt that a better knowledge of symbiosis will enable surgeons to know how chronic sepsis tills the soil in the human body to make it receptive for the germs of cancer.

CASES OF GUNSHOT WOUNDS OF BLOOD VESSELS FROM MESOPOTAMIA.

BY

O. W. J. WYNNE, CAPTAIN R.A.M.C.,

SURGICAL SPECIALIST VI (POONA) DIVISION;

D. T. RICHARDSON, CAPTAIN R.A.M.C. AND G. E. DODSON, LIEUTENANT R.A.M.C.

(With Special Plate.)

DURING the past eighteen months of the Mesopotamian campaign, twenty-four cases of bullet wounds of large blood vessels have passed through the Colaba War Hospital, Bombay, including three cases treated by operation prior to admission, to which no further reference is made in these notes.

As this hospital has received fully 80 per cent. of all cases of severely wounded British troops, these twenty-four cases probably represent the great majority of wounds of this nature which reached the overseas base in Bombay without previous operative treatment. All these cases were due to bullet wounds, and in this connexion it may be mentioned that the great majority of wounds treated here have been bullet wounds caused either by the pointed German bullet used by the Turks or the large leaden Arab bullet.

The cases have shown a considerable degree of variety; four were obliterative lesions, eight were arterio-venous aneurysms, nine were diffuse false aneurysms.

The obliterative lesions showed absence of the distal pulses, with no other marked sign of lesion of the vessels in question. One of these was operated on twelve weeks from the date of injury for lesion of the brachial nerve cords; here the axillary artery in its third stage was found to be completely divided, with each end occluded by a firm clot; the axillary vein was thrombosed. There was no local effusion of blood. Another was operated on for lesion of the median nerve in mid-arm, and a similar condition was found, but the ends of the artery could not be detected amongst the scar tissue surrounding the nerve. The other two cases were of wounds involving the superficial femoral artery. One had apparently undergone spontaneous cure from the effect of a tourniquet applied on the field, and left on for forty-eight hours. It had cut into the subcutaneous tissues, leaving a definite scar on the inner side of the thigh, with only gangrene of about half of the great toe as a result. The other showed a very small haematoma over the mid-third of Hunter's canal, with no pulsation or bruit, and absent distal pulses.

The arterio-venous wounds included one of the subclavian vessels, one axillary, one common femoral, one superficial femoral, and two popliteal, one peroneal, and one acromio-thoracic; the second and two last were operated on in the hospital; the others were transferred to England under expectant treatment.

All the cases of diffuse false aneurysm were treated by operation in the hospital. Notes on these and the other three cases requiring operation are as follows:

CASE I.—*Traumatic Aneurysm of Right Axillary Artery.* (Fig. 1.)

Wounded in Mesopotamia. Wound of entry below the middle third of the right clavicle; bullet lodged.

On admission there was a large pulsating tumour under the great pectoral muscle, extending from the middle third of the clavicle into the axilla and over the upper part of the chest wall, internal to the axilla. The shoulder was drawn up, and traction on the arm did not alter the deformity and caused great pain. There was a loud and harsh bruit over the tumour. Compression of the subclavian artery, which could not be carried out efficiently because of the position of the shoulder, caused pulsation and bruit to diminish to a limited extent. Circulation in the hand and arm was sluggish, there was slight oedema, and the radial pulse was absent. Temperature varied between normal and 99.4°. Pain was very severe, and interfered very much with sleep. There was complete right wrist-drop.

As the increase in size within a few days was definite and marked, it was decided to operate without delay.

Operation.

On April 24th, 1916, the third part of the subclavian artery was ligatured as a preliminary measure. Much difficulty was experienced in this part of the operation on account of the upward displacement of the clavicle.

A second incision was made from the middle third of the clavicle to a point over the neck of the humerus, and the line between the great pectoral and deltoid muscles defined. Part of the clavicular origin of the great pectoral was divided, and the muscle strongly retracted inwards. The sac wall was now exposed, and consisted apparently of the much stretched and thinned pectoralis minor muscle and the clavipectoral fascia; the wall burst on gentle manipulation, and a large quantity of clot and fresh blood was removed with swabs and hot water; very severe haemorrhage occurred from the distal end of the injured artery, and much difficulty was experienced in examining the lesion and applying pressure forceps. Firm pressure in the axilla helped temporarily to control the haemorrhage, and the proximal end was caught; traction on this end helped to control the distal end, the wound being somewhat valvular. Ligatures were applied above and below the lacerated area, which involved half an inch of the line of the axillary artery in the second stage. It was an irregular tear without much gaping of the edges. Arterial haemorrhage still occurred and was found to be due to a small included branch; when this was ligatured, haemorrhage ceased. The pectoralis major muscle was sutured and the cephalic vein, which had been injured, was ligatured.

The wound was then closed in two layers, a rubber tube being inserted at the lowest point.

Serous oozing occurred for several days, and a small collection of fluid, which did not escape by the tube, was drained on May 4th. The wound had healed by May 14th and the patient was transferred to England on May 22nd. There was no improvement in the musculo-spiral paralysis.

CASE II.—*Arterio-venous Aneurysm of Right Acromio-thoracic Trunk.*

Wounded in Mesopotamia. The wound of entry was below the centre of the right clavicle; bullet lodged. Wounds healed on admission. There was a pulsating tumour, the size of an orange, felt in line of axillary artery below middle third of clavicle; pressure on subclavian artery caused pulsation to cease and sac to partially empty. The tumour varied in size and tenseness on movement of the upper extremity. There was a soft bruit. The radial pulse was good. There was no nerve involvement. A fortnight after admission a definite increase in size was noticed.

Operation.

On May 4th, 1916, the subclavian artery was ligatured in its third stage. All pulsation in the tumour ceased.

A second incision was made in the interval between deltoid and pectoralis major muscles; the latter muscle was drawn inwards and the pectoralis minor exposed; it was stretched over the tumour. The axillary artery was defined and was found to be uninjured; a much enlarged branch (thoracic axis) was seen to disappear into the tumour, which lay below and internal to the axillary artery. This branch was ligatured and the sac incised. The clot was removed; some of it was organized and some fresh. Regurgitant haemorrhage from the distal end could not be controlled by ligature as the external anterior thoracic nerve was involved in the sac wall. A purse-string suture was tied as close to the bleeding point as possible and caused all oozing to cease. Another pedicle posterior and internal was ligatured. The sac was intimately associated with the pectoralis minor muscle, which was atrophied and spread over the sac wall. It was almost unrecognizable as muscular tissue. The sac was lined with tunica intima. The wound was closed without a drain. Circulation in the arm and hand remained good. There was no return of the radial pulse. The patient was transferred to England on May 22nd.

CASE III.—*Arterio-venous Aneurysm of Left Axillary Vessels.* (Fig. 2.)

Wounded in Mesopotamia, January 21st, 1916. The wound of entry was below the left coracoid process, and that of exit near the inferior angle of the scapula.

Wounds healed on admission. History of severe pain from time of injury, with no improvement. Left elbow semiflexed and stiff. Hand contracted, fingers bluish and cold; slight voluntary power of extension at wrist-joint. No other movement in forearm or hand. Distal pulses absent; no sign of aneurysmal swelling in axilla.

Operation.

On February 17th, 1916, operation was undertaken for the relief of pain. Incision along axillary border of left pectoral muscle. An extensive mass of hard scar tissue was found in the line of the axillary vessels at lower border of axilla. The origin of the brachial artery was identified; this did not pulsate. The axillary vein contained a clot near its origin; about two inches above this point a small sac, non-adherent to the surrounding tissues anteriorly, was seen to pulsate. It was disc-shaped, very clearly defined, purplish-red in colour, and about one and a quarter inches in diameter; it was adherent to the wall of the axillary vein, but did not communicate any pulsation to it; its connexion with the axillary artery was not visible, but the pulsation of the latter could be felt an inch above the aneurysm, and pressure here stopped its pulsation. Since a ligature could not be applied to the axillary artery above the aneurysm, a second incision was made in the line of the fibres of the great pectoral muscle; the artery was exposed here—that is, about two inches above the lesion—and a ligature applied. Pulsation then ceased abruptly. The sac lay across the median nerve near its origin. Above and below the sac the nerve was very oedematous. The sac was opened and was found to be lined by tunica intima all through and to contain no openings. On freeing its posterior wall from the median nerve the latter was found to be flattened to the thickness of a finger-nail by the pressure of the sac wall.

While an attempt was in progress to free the ulnar and musculo-spiral nerves from scar tissue, free haemorrhage, apparently unconnected with the aneurysmal sac, occurred from three separate sources deep in the posterior wall of the axilla. It was impossible to control any of these points with pressure forceps, and the patient had lost so much blood within a couple of minutes that it was necessary to pack the axilla and give an intravenous infusion of saline. The upper incision was then closed, the axillary wound roughly sutured over the packing, and the patient returned to bed.

After-History.

Subsequently very great difficulty was encountered in the after-treatment owing to infection of the axilla and repeated secondary haemorrhages. These occurred on the fourth day, when the packing was changed, and on three subsequent occasions during the first fortnight after the operation. A pulsating area deep in the axilla was noticed twelve days after the operation covered by sloughs and recent clot. Daily packing of the axilla with antiseptic gauze plugs, aided by the pressure of wool pads behind the shoulder, was resorted to, the subclavian artery being compressed during the dressing. There was no further haemorrhage, and the pulsating area had disappeared two weeks later. By then the terminal phalanges of the fourth and fifth fingers had become gangrenous, and showed a line of separation. There were superficial sloughs over the inner condyle of the humerus, on the flexor surface of forearm, and over the styloid process of the ulna. There was no power of movement in the upper extremity, and no sensation below the axilla. At the end of April sensation had returned in the arm and over an irregularly distributed area in the upper third of the forearm. There was weak voluntary flexion at the elbow-joint.

The patient was transferred to England in June. His general condition then was excellent. There was still a small granulating area in the axilla. The slough in the forearm had healed. The nutrition of the upper extremity was good. Movement at the elbow-joint was good and improving. The wrist was stiff, and had no voluntary movement; its passive movements were improving. The phalangeal joints were stiff, and there was a tendency to contraction of the fingers. This disability was improving under passive movement and massage, and the hand was plump and well nourished, except where the tips of the fourth and fifth fingers had become gangrenous. Electrical reactions were normal above the elbow-joint. The wrist flexors gave a weak reaction to galvanism; no reaction to faradism.

CASE IV.—*Traumatic Aneurysm of Left Axillary Artery.* (Fig. 3.)

Wounded in Mesopotamia, April 9th, 1916. Wound of entry over the deltoid muscle in the upper third of the left arm. Bullet lodged, having fractured the shaft of the humerus and penetrated the lung (there was haemoptysis for fourteen days after the date of injury).

On admission the wound was healed. There was a history of severe and constant pain in the axilla and on the radial border of the forearm. There was marked oedema in the hand and forearm and about the elbow. A deep sloughing pressure sore existed over the inner condyle of the humerus. The left arm was completely paralysed. Loss of sensation was complete

below the axilla; there was atrophy and stiffness of the muscles of the forearm. X-ray examination showed an oblique fracture of the upper third of the shaft of the humerus, without comminution.

A marked swelling existed over the anterior surface of the shoulder-joint, limited internally by the outer border of the great pectoral muscle, but diffuse and extending under the deltoid muscle externally; it also filled the floor of the axilla with a tense ball-like mass. There was pitting on pressure over the swelling, which had the appearance of a brawny cellulitis covering a deep suppurating focus. Pulsation could not be detected in any part of the swelling, but pressure on the subclavian artery eased the tension—in the axilla. There was no bruit. The radial pulse was absent.

During the three weeks in which the patient remained in hospital prior to his operation no improvement occurred in his condition, and the swelling did not decrease in size. The pressure sore at the elbow became more extensive and the general condition disimproved steadily from pain and lack of sleep. The temperature varied between 100° F. and 101° F., and the pulse 80 to 90. The shape of the swelling became more definite and pulsation was just visible at the anterior fold of the axilla on May 20th, and was palpable in the floor, which was very tense and painful.

Operation.

On May 24th a crescentic incision from near the inner end of the clavicle to the insertion of the great pectoral muscle was made, and continued deeply in its inner third. The pectoralis minor muscle was freely exposed by separation of the fibres of the atrophied great pectoral muscle; the former was then divided and reflected, exposing the axillary artery fully as far as the origin of the long thoracic artery. During this part of the operation the acromio-thoracic vein was injured, and was ligatured and divided.

Exposure of the third stage of the artery was continued as far as possible distally, until it became buried under the inward projection of the aneurysmal sac, and a ligature was then applied as low as possible—that is, between the long thoracic and subscapular arteries.

The distal part of the incision was then continued deeply. Retraction of the great pectoral and deltoid muscles displayed the anterior portion of the sac wall, which was formed by the spread-out fibres and aponeurosis of the coraco-brachialis muscle. A vertical incision was made in this covering, and, with the aid of strong retraction and partial division of the great pectoral muscle near its insertion, the cavity was exposed. Free haemorrhage was then occurring from the injured artery; the proximal part was seen and clamped, and pressure by tourniquet high in the arm controlled haemorrhage from the distal end sufficiently to enable its identification and control by pressure forceps to be effected. Ligatures were then applied above and below the injury, which was incomplete and ragged, involving half the circumference of the artery. The axillary vein was uninjured. There was no further arterial haemorrhage, and when the cavity, which was very extensive, had been flushed with hot saline the oozing soon ceased.

The patient's condition did not allow of a full examination of the accompanying nerve injuries. The ulnar nerve was adherent to the lower part of the false wall of the sac and matted with clots. The musculo-spiral and musculo-cutaneous nerves were identified and did not show any lesion within the cavity. The median nerve could not be identified.

The wound was closed and drained with a rubber tube at the lowest corner. There was a serous discharge for eight days.

After-History.

The patient's general condition improved rapidly, oedema rapidly disappeared, and pain was relieved. The pressure sore at the elbow improved, and had healed when the patient was transferred to England on about July 4th. There was then no return of power in the arm or hand, but full sensation had returned as far as the elbow-joint. There was a weak reaction to faradism in the wrist flexors.

CASE V.—*Traumatic Aneurysm of the Left Brachial Artery.* (Fig. 4.)

On April 24th, 1916, this patient was shot through the left upper arm; he stated that the wounds healed in some five days, but that the injury was immediately followed by much local swelling, which went down to the elbow, and subsequently grew less and localized to the middle of the arm.

On May 19th, on admission, the entry wound, 1½ in. below the insertion of the pectoralis major, and the exit wound in the mid-posterior surface of the arm, 3 in. above the elbow-joint, were both healed; a small aneurysm of the brachial artery in the direct track of the wound was present, about the size of a walnut; its pulsation and harsh murmur were both controlled by pressure on the artery above; there was much severe pain in the median nerve area below, and some definite paralysis of the muscles of the first and second digits supplied by the nerve; pulse at wrist could not be felt.

Operation.

On exposure of the aneurysm, on May 25th, the median nerve lay on it, that is, internal to it, and was adherent to it. It was dissected free, and the condition of the nerve appeared good; the brachial artery above and below the tumour was small (about the size of the ulnar artery in the forearm). The sac of the aneurysm was on its outer side, and only a small communication with the artery existed. The artery was ligatured above and below the tumour and the intervening portion removed, including above the aneurysm a small annular dilatation of the vessel. The remainder of the sac, which was thin, was left, after being emptied of blood clot.

Primary union followed, and the patient's convalescence was only complicated by an attack of catarrhal jaundice, which began ten days after the operation and cleared up in three weeks' time, when he was sent to Egypt. By that time the pain in the median nerve area had become much less, though still slightly present, and the paralysis also had cleared up but for the flexor profundus action in the index finger, which was still mostly absent.

CASE VI.

Wounded in Mesopotamia; penetrating wound of the right arm in mid-third; wounds healed on admission.

There was a small aneurysm in the course of the brachial artery at the centre of the arm, with a distinct pulsation and bruit. Compression of the brachial artery above the lesion caused a reduction in size and cessation of pulsation. There was a slight radial pulse. There was pain in the area of distribution of the median nerve, with paresis of the flexors of the fingers.

Operation.

On May 23rd an incision was made over the tumour, after the application of a tourniquet. The sac was exposed; the median nerve was stretched over it, it was flattened and injected; at the lower part of the wound it was oedematous. The ulnar nerve was involved in scar tissue; it was easily freed and was found to have been perforated by the bullet. The sac of the aneurysm was about the size of a pigeon's egg. The artery had been almost completely severed, and only existed as a thin band in the inner side, along the half-inch of its course that was involved.

The sac was dissected from its bed and the artery ligatured above and below. The sac was in part lined by tunica intima. The median nerve was wrapped in a fascial sheath. The sheath of the ulnar nerve was sutured and adhesions were dissected away. There was no scar tissue amongst the axons. The nerve was wrapped in a fascial sheath. The wound was closed without drainage and healed without complication.

Pain had disappeared completely from the hand when the patient was invalided.

CASE VII.—*Traumatic Aneurysm of Right Superficial Femoral Artery.*

Wounded in Mesopotamia, November 22nd, 1915. Tourniquet applied at time of injury. Note with patient on arrival stated: "Tourniquet applied for two hours daily."

On admission on January 2nd, 1916, an extensive non-pulsating tumour existed on the inner and anterior area of the upper third of the right thigh, limited above by Poupart's ligament. The wound of entry was 4½ in. below Poupart's ligament in the line of the sartorius; inside, the bullet had been removed from the fascia over the adductor muscles 2 in. below the perineum. There was no infection of either wound. The patient stated that the swelling had commenced when the wound occurred, and had gradually increased for several days. Circulation in leg and foot was good; no oedema of leg or foot. Both anterior and posterior tibial pulses present, but very much modified. There was no bruit over the swelling. Pain was constant, but not severe.

Operation.

On January 13th a slight leakage occurred from the wound of entry during the night; it was decided to operate immediately.

Tourniquet control being impossible on account of the high upper limit of the swelling, the limb was sterilized and emptied as far as possible of blood by a Martin's bandage and elevation. Digital compression was made on the common femoral artery at Poupart's ligament.

The tumour was incised in the line of the vessels, and large masses of old and recent clot removed. Haemorrhage from both ends of the injured vessel still occurred. Exposure of the injured portion of Hunter's canal showed a gross lesion of the artery 1½ in. below the origin of the deep femoral artery. Pressure forceps were applied above and below the injury.

The bullet had invaded the vessel sheath on its inner side, lacerating the inner wall of the artery for half an inch of its length, leaving the anterior and outer wall maintaining the continuity of the vessel, devitalized and irregular, like a piece of torn rag. A small sac, the size of a walnut, and composed of tunica intima, lay to the outer side of the vessel, and had evidently developed as a diverticulum in the main blood cavity from a piece of the lacerated inner wall. It was filled with semi-organized clot.

Ligatures were applied ½ in. above and ¼ in. below the limit of the lesion, two included branches being tied. The vein and internal saphenous nerve were uninjured. The cavity was irrigated and closed in layers without injury.

The result was satisfactory. The distal pulses were obtainable within twenty-four hours; no interference with the circulation in the foot or leg occurred. A small haematoma was drained ten days later. The patient was transferred to England on March 6th, 1916; the wound was then healed.

CASE VIII.—*Traumatic Aneurysm of Left Deep Femoral Vessels.*

Wounded in Mesopotamia. The wound of entry on the posterior and inner surface of the left thigh in its upper third, exit antero-externally at the same level.

A note with the patient on admission stated, "Fracture of femur in mid-third, lesion of great sciatic nerve." Operation was undertaken for relief of pain in foot, scar tissue removed from the great sciatic nerve. The wounds were healed on admission.

On May 2nd, 1916, the pain in the left thigh was very severe and caused insomnia, the pulse was 120, and the temperature 103° F.

On May 3rd examination showed an extensive and tense swelling involving the middle and part of the upper third of the left thigh antero-externally and postero-internally. There was no swelling directly over Hunter's canal. There was much tense elasticity in the swelling with no pulsation and no bruit. Compression of the common femoral artery at Poupart's ligament eased the tension, and looking horizontally at the swelling from the outer side it was seen to rise rapidly on release of the artery. The pulses were present and weak in the anterior and posterior tibial arteries. The patient's general condition was not good; anaemia was intense.

Operation.

Operation was undertaken at once, a tourniquet being employed. The peculiar position of the swelling, with the presence of the distal pulses, suggested that the superficial femoral artery was not involved, but its extensive nature decided an incision over Hunter's canal. This opened into a mass of recent clot lying external to the sartorius muscle. This was cleared away, and examination of Hunter's canal showed that no lesion of the superficial femoral artery had occurred. The great mass of the clot lay external to the canal and extended backwards, lateral to the shaft of the femur.

The intermuscular septum between the vastus internus and the adductor muscles was opened and a mass of fresh clot, almost as extensive as that in front, was evacuated. With difficulty the deep femoral vessels were exposed, and were found to be the cause of the haemorrhage. On loosening the tourniquet, free haemorrhage, 1 in. from the origin of the deep femoral artery, occurred. The vessels were ligatured. Troublesome oozing from deep in the adductor muscles and from the neighbourhood of the shaft of the femur followed. This was stopped by pressure forceps and ligature. The wound was then closed and drained by a large rubber tube.

After-History.

The patient's condition was critical for some days after the operation, the pulse being poor and restlessness extreme. A small haematoma developed after the tube had been removed. Three days later, when this was drained, the wound healed without further complication, and pain completely disappeared. When the patient was transferred to England some weeks later his general condition was good. Foot-drop remained.

CASE IX.—*Arterial Haematoma due to Injury to Branch of Left Deep Femoral Artery.*

Wounded in Mesopotamia. The wound of entry was on the outer surface of the mid-third of the left thigh, that of exit through the adductors at the same level. The bullet also traversed the right thigh.

On admission, on May 2nd, 1916, the patient was anaemic and debilitated, with a temperature of 102° F. and a pulse of 100. There was a large and hard haematoma in the inner and upper third of the left thigh. The wound of entry was healed, and the wound of exit granulating, with a serous discharge. The distal pulses were present and weak. There was no bruit and no pulsation over the swelling. Compression of the common femoral artery at Poupart's ligament did not affect its tension. The superficial femoral artery had been ligatured in Hunter's canal on the way home from Mesopotamia.

The temperature and pulse-rate fluctuated for several days after admission, the pain was considerable, and complete rest with elevation of the limb was adopted. On May 15th a slight leakage occurred from the wound of exit and continued for two days with increase of pain. On May 17th a sudden marked increase in tension occurred, with severe pain and blanching of the limb below the knee. The pulse-rate increased to 140.

Operation.

A tourniquet was applied and an incision made over the tumour below the sartorius muscle. Much old and recent clot was evacuated, and haemorrhage was found to be caused by a large branch of the deep femoral artery, which had been severed and projected into the cavity. Ligature of this branch checked haemorrhage completely. There was much local laceration of the tissues, from which free oozing occurred after removal of the tourniquet. The wound was then closed and drained by a tube.

After-History.

The patient's general condition improved rapidly after the operation. There was a free discharge for several weeks, which was found to be infected with *Bacillus pyocyaneus*. There was no further haemorrhage, and the patient was transferred to England with the wound still draining.

CASE X.—*Traumatic Aneurysm of Left Superficial Femoral Vessels.* (Fig. 5.)

Wounded in Mesopotamia, March 8th, 1916. The wound of entry was near the left adductor tubercle, and that of exit 4 in. above the knee-joint through the biceps muscle.

On admission to the convalescent ward on March 20th there was oedema below the knee, and also drop-foot. There was no swelling in the thigh.

On March 26th the patient got out of bed without leave; some bleeding then occurred from the wound of entry. The same night a swelling developed over the inner and lower third of the thigh, and increased gradually. When seen on March 29th an extensive doughy swelling existed, filling the inner and posterior area of the lower third of the thigh. There was severe local pain. There was no visible pulsation. The swelling was tense and resilient. There was no bruit. Compression of the common femoral artery at Poupart's ligament relieved the tension considerably, and on sudden release of the artery the swelling was seen to increase in extent when a horizontal view was taken of its outline. Oedema of the limb below the knee was marked; circulation in the foot was poor, return of the blush on the ball of the foot and over the malleoli being slow after pressure. The distal pulses were absent. The patient was in acute pain, with a temperature of 102° and a pulse of 128. There was then no bleeding from the wound of entry.

First Operation.

On March 29th a tourniquet was applied in the mid-third of the thigh. Incision in the line of the sartorius muscle; masses of recent clot were evacuated. The artery lay unprotected in the outer wall of the blood cavity. The vessel wall was severely devitalized for 3 in. above the opening in the adductor magnus. There was an extensive irregular laceration at the centre of this portion. An adherent clot lying behind the artery evidently sealed an injury in the wall of the vein. The artery was ligatured 2½ in. above and just below the injury, three included branches being also tied; one of these was the anastomotic.

On removal of the tourniquet a rush of blood from the injured femoral vein occurred, but soon stopped; the vein was not disturbed. The cavity was packed and drained by a tube in one corner, the remainder of the incision being closed in layers.

After-History.

After the operation the general condition improved, but the leg and foot were dusky and cold. Recovery of the circulation took place except in several local areas, chiefly in the distribution of the external popliteal nerve, and a deep slough subsequently developed in the mid-third of the leg, involving a small portion of the bellies of the peroneal muscles; superficial sloughs developed over the heel, the terminal phalanx of the great toe and the outer malleolus. Apart from those very local areas, circulation recovered in the leg and foot.

The temperature and pulse rate fell rapidly after the operation, and remained nearly normal. There was a serous discharge from the operation wound for three weeks. The wound had completely healed by May 10th.

An operation was then undertaken for examination of the nerve lesion. There was loss of epicritic sensation on the posterior surface of the leg, and complete loss of sensation below the ankle-joint except over the inner malleolus.

There was no voluntary movement in the foot or toes.

Second Operation.

An incision in the upper part of the popliteal space revealed an extensive lesion of the sheath and fibres of the external popliteal nerve at its origin, with less severe injuries to the sheath and fibres of the divisional point of the great sciatic and the upper two inches of the internal popliteal nerves. A mass of dense and very hard scar tissue involved all three nerves. When the nerves were freed from the scar it was found that the fibres of the external popliteal had been severely lacerated and denuded of sheath; the scar tissue was removed as far as possible, and the injured area wrapped in a coating of deep fascia.

Several nodular masses of scar tissue were removed from amongst the fibres of the great sciatic and internal popliteal nerves, the incisions in their sheaths were closed with fine catgut and the injured areas wrapped in fascia.

The patient was transferred to another hospital (Dehra Dun) for electrical treatment and massage three weeks later. The sloughs were then granulating.

CASE XI.—*Traumatic Aneurysm of the Left Superficial Femoral Artery.*

Wounded in Mesopotamia on April 15th, 1916, by a bullet passing through the left thigh. The patient stated that the wound was followed at once by marked swelling in the track of the wound and followed by slight increase in size for three days, after which it kept stationary.

On admission, on April 30th, there was a healed entry wound three inches above, and external to, the left patella; the exit wound was on the postero-internal surface of the the thigh very slightly higher up, and was represented by a shallow granulating wound the size of a halfpenny. There was a hard fixed swelling on the antero-internal aspect of the lower third of the thigh; pulsation in it was only felt with difficulty, no murmur was heard, and no dorsalis pedis or posterior tibial pulses were felt below, though the circulation in the foot was good. Movement of the knee was impossible owing to the pressure of the tumour; its size was not altered by controlling the femoral artery above, though its pulsation was. No pressure symptoms on nerves were present.

On May 1st the patient's temperature rose from normal to 100° and his pulse from 90 to 120, suggesting possible infection of the aneurysm from the granulating wound of exit.

Operation.

On May 2nd a tourniquet was applied, and an incision in the line of the femoral artery made over the tumour after the granulating exit wound had been treated with pure carbolic acid and gauze covered; it lay posterior to the incision. About a pint of black blood clot was evacuated and the lower end of the femoral artery lay in the wound with a round hole in it the

size of a large pea; suture of the vessel, owing to the possibility of infection of the aneurysm, was not entertained, and the artery was ligatured above and below the wound in it, with a small branch in the intervening portion also. No bleeding followed the removal of the tourniquet; the vein, which lay in the common sheath, intimately connected with the artery, was uninjured, though it did not fill with blood after the removal of the tourniquet.

The wound was drained with a small tube through a counter incision on the outer side of the thigh through the vastus externus aponeurosis.

The circulation in the foot kept well, free oozing from the draining tube of dark blood-stained fluid occurred for a few days. The operation wound healed by first intention, the exit wound of the bullet in fourteen days, and the drainage sinus was nearly healed on the discharge of the patient from hospital for Egypt on May 29th; the knee movements were then good.

CASE XII.—*Arterio-venous Aneurysm of Right Peroneal Vessels.* (Fig. 6.)

Wounded in Mesopotamia. The wound of entry was over the crest of the right tibia, and the exit was in the mid-third of the leg, posterior surface.

The wounds were healed on admission. A pulsating oval swelling, the size of a large egg, existed over the upper part of the outer head of the gastrocnemius muscle. There was a soft humming bruit, but no thrill.

Pressure on the common femoral artery at Poupart's ligament emptied the sac and caused the bruit to disappear. The anterior tibial pulse was present and normal; the posterior tibial pulse was present but weak. There was no paralysis or other sign of nerve involvement, and no pain, while the circulation in the foot was normal. An *x*-ray examination showed incomplete fracture of the upper third of the shaft of the fibula with a small separated fragment.

The following increases in the size of the swelling occurred:

Measurement of circumference of leg,	May 3rd ...	11½ in.
,, ,, ,,	May 7th ...	12¼ in.
,, ,, ,,	May 10th...	12⅜ in.

This rapid local enlargement of swelling caused operation to be decided on.

Operation.

A diagnosis of arterio-venous aneurysm of the peroneal vessels being made, an incision 4 in. long was made over the tumour in the calf, the deep fascia, outer head of gastrocnemius and soleus muscles being incised before the sac wall appeared. On account of adhesion of the sac wall to the injured area of the shaft of the fibula and surrounding tissues it was impossible to clear it fully. The inner wall was cleared until the posterior tibial nerve and vessels were exposed; it appeared that these were the vessels involved. They were accordingly ligatured proximally. Further dissection showed that the posterior tibial vessels were uninjured, the lesion having involved the peroneal vessels a quarter of an inch from the origin of the artery. These vessels were ligatured proximally. An examination of the sac showed it to be composed of tunica intima; its parietal wall was closely adherent to surrounding structures, and its extent when empty was considerable. A long cul-de-sac passed forwards under the tibialis anticus muscle through the injury in the interosseous membrane. The outer wall of the main sac encroached on the medullary cavity of the injured fibula, the inner wall was limited to the area lateral to the line of the posterior tibial vessels.

On removal of the tourniquet there was free arterial haemorrhage in the outer wall of the sac. This was controlled with difficulty, as the bleeding point lay under cover of the shaft of the fibula. This was evidently the distal end of the peroneal artery.

After-History.

There was troublesome oozing from the deep part of the sac and from the branching veins in the inner wall; as this could not be completely arrested the sac was packed with gauze and the wound closed in layers. Two days later the gauze packing was removed and healing occurred without complication. The patient was transferred to England some weeks later.

SUMMARY.

Treatment of the series of twenty-one cases has suggested the conclusion that bullet wounds of large blood vessels coming under observation on an average four weeks from the date of injury, most frequently show signs of either diffuse false aneurysm or arterio-venous aneurysm, and that the former and more urgent cases can be successfully treated by a local operation at this period, provided that the circulation above can be efficiently controlled, either by tourniquet, digital compression, or, in the case of the upper extremity, by ligature of the main artery at some point above the lesion, thus confirming, as far as experience of this limited series of cases is concerned, the experiences of previous campaigns.

The advantages of the exposure of the vessel at the point of injury as against proximal ligature seem clear, particularly in cases involving the lower extremity. First, it can be definitely ascertained whether the main vessel or a branch is involved. The importance of this is illustrated by Case IX, where secondary haemorrhage occurred after proximal ligature of the superficial femoral artery; the second operation showed a branch of the deep femoral to be the true cause of the condition. Secondly, all available channels are thus left open for the maintenance of the collateral circulation. Thirdly, the extent of the injury to the vein or neighbouring nerve trunks can be observed and perhaps dealt with.

Operative measures were confined to the cases presenting urgent indications for operation. These indications were:

1. Secondary haemorrhage.
2. Signs of supervening infection.
3. Marked increase in size.
4. Severe pain, due either to (*a*) tension, (*b*) nerve involvement.

Most of the cases operated on presented more than one of these indications.

The five cases of arterio-venous aneurysm sent to England without operation showed none of these indications while in hospital; on the contrary, in all but one there was decrease in size to some extent.

The presence of a normal or slightly modified distal pulse has an interesting bearing on the diagnosis as being strong evidence in favour of a lesion not involving the main arterial trunk (Cases II, VIII, and IX). This sign cannot, however, be invariably depended on. In Case VII the anterior and posterior tibial pulses were present, although weak; and a second very interesting case, not in this series, operated on by Captain Harmer, R.A.M.C., in the Freeman Thomas Hospital, Bombay, showed only slightly modified distal pulses, thereby causing considerable embarrassment to the operator. In this case, a diffuse false aneurysm of the axillary artery, there was a good radial pulse; the inference was that a branch was involved. The subclavian artery was therefore not ligatured as a preliminary measure. The operation was successful, and the patient recovered, but haemorrhage was so severe as to be nearly fatal at the time of operation.

Repair of these gross gunshot arterial lacerations by suture was quite impracticable in almost every case; local destruction of half or two-thirds of the circumference of the vessel wall with an area of apparent devitalization extending for a quarter of an inch or more above and below the torn area quite precluded any attempt at suture. The apparently extreme rapidity of the establishment of collateral circulation argues that attempts at repair of the vessel where the limb is healthy is unnecessary, except in the case of lesions above the division of the common femoral artery.

Evidence of the establishment of a free collateral circulation at this date after the receipt of the injury, under what are undoubtedly unfavourable conditions, may here be mentioned as a feature of these cases, as, at a period of one month (the average length of time between the date of injury and the operation), collateral circulation seems to have been fully established in almost every case, and its establishment in a sufficient degree to carry on nutrition of the limb seems capable of taking place at a much earlier date. It is inconceivable that vessels as severely lacerated as those concerned in Cases VII and X can maintain a circulation in their continuity of any appreciable extent.

In spite of the fact that septic organisms were present in the discharge occurring in two of the cases after operation, there was only one case of secondary haemorrhage (Case III), and in this case the arterial haemorrhage had not been fully controlled by ligature at the operation. Silk ligatures were used in all cases. Free drainage was adopted in every case where the possibility of infection was suspected; the results suggested that the treatment of such conditions on the lines of ordinary septic wound is unattended by any danger.

The frequency of the involvement of the main nerve cords of the limb, either directly by the bullet, or by the pressure of the blood tumour or pulsating sac wall, has influenced the treatment in several cases. In Case IV pain alone was an urgent indication for operation, and in Cases III, V, and VI the pain due to nerve involvement was the main indication. The severity of the injury to the great sciatic nerve and its branches in Case X probably accounts to some extent for the occurrence of necrotic superficial lesions in this case.

Conclusions.

The conclusions drawn from experience of these cases are:

1. Cases of diffuse traumatic aneurysm require early operation in all cases.
2. Results of operation at the point of the lesion are satisfactory.
3. Fifty per cent. of arterio-venous aneurysms benefit, temporarily at any rate, by delay in operative treatment, considering the known results of operation in these cases.
4. Considering the proportion of obliterative lesions, care in the early treatment and good transport arrangements probably reduce the incidence of diffuse false aneurysms.
5. Where the advent of sepsis is suspected in cases of diffuse false aneurysm, free drainage after operation is unattended by danger of secondary haemorrhage.
6. Efficient collateral circulation is established in most cases of destructive gunshot arterial lacerations within a month of the date of injury.

TRAUMATIC ANEURYSM DEALT WITH BY OBLITERATIVE ARTERIORRHAPHY.

BY

JOHN C. JEFFERSON, F.R.C.S.ENG.,

HONORARY SURGEON, ROCHDALE INFIRMARY.

THE aneurysm in the following case was a true traumatic aneurysm. The coats of the artery were wounded by the bullet, and one of two events happened: either the wound healed but the scar subsequently formed stretched, or the outer coats were ruptured, and in course of time the intima, with probably part of the media, bulged through the gap to form an aneurysmal sac.

Pte. R., aged 37, was admitted to the Rochdale Infirmary suffering from septic shell wounds of the back. He had also been wounded in the left arm by a rifle bullet. The missile had entered the posterior and outer aspect of the forearm about 2 in. below the line of the elbow-joint, and, travelling upwards and inwards, had emerged just above the internal epicondyle of the humerus. The patient stated that there had been little haemorrhage from the wound at the time of infliction, and that it had healed within five days. Two weeks after admission a pulsating swelling appeared in the antecubital fossa. As the injury had been caused by a small bore bullet, and the man's general condition, by reason of the septic shell wounds, was very poor, it was considered best to await developments.

At the end of another four weeks, however, the swelling was the size of a hen's egg and still increasing. It was accordingly decided to deal with it by arteriorrhaphy, and a tourniquet having been applied to the arm the sac was laid open and the contained clots turned out. Three openings into it were discovered; one was small, situated on the inner aspect of the sac, and leading upwards and backwards. This was, in my opinion, a common trunk of origin of the anterior and posterior ulnar recurrent arteries. Two larger openings in the lowest part of the sac were distant about ½ in. from one another, and connected together by a deep groove. From them a probe travelled upwards and downwards along the tracks of the brachial and ulnar arteries respectively. A probe sharply bent could be passed into the upper opening and then immediately downwards along the course of the radial artery. Thus the condition was an aneurysm of the highest part of the ulnar artery.

The interior of the sac was well scrubbed with iodine to promote adhesions, a continuous suture of fine chromic catgut on a fully curved intestinal needle was taken, and the smallest opening closed with four points of suture. In a like manner the upper opening was closed and the suture continued along the groove to close the lower opening. Following the recommendation of Matas, the sutures were made to enter the sac wall rather wide of the margins of the openings and the sides of the groove. In this way was produced a firm approximation of as large a marginal surface as possible. The tourniquet was now removed and complete haemostasis seen to have been secured. A second row of sutures was now inserted about half-way up the walls of the sac. The skin flaps had not been dissected at all from the subcutaneous surface of the sac and so were lined with smooth sac wall. Two relaxation sutures were then put in on each side to complete the obliteration and silkworm-gut sutures brought the skin edges into apposition. Recovery was uneventful and the result quite satisfactory.

The only alternative treatment worth discussing in this case is that of excision of the sac. Excision of the sac would have required a much more extensive dissection than simple opening and stitching up from the inside. Further, excision would have, in my opinion, necessitated in this case ligature of the brachial artery at its bifurcation, and so have also obliterated the radial artery as well as the ulnar. The foregoing considerations are, no doubt, not of paramount importance here, but in other situations they might well be of much greater significance.

To state the matter shortly, arteriorrhaphy deals with aneurysm by a comparatively simple method in which the sac is little disturbed and the collateral circulation not interfered with.

REPORT ON 170 CASES OPERATED UPON UNDER SPINAL ANAESTHESIA.

BY

T. A. WESTON, CAPTAIN R.A.M.C., M.B., B.C.CANTAB.,

LATE SURGICAL SPECIALIST, 8TH LUCKNOW DIVISION, INDIA.

I VENTURE to publish the following series of cases in the hope that they may be of interest to those who, like myself, are advocates of spinal anaesthesia.

The cases were operated upon by me at the Station Hospital, Lucknow, during 1914 and 1915. The majority were British soldiers, about a dozen were sepoys, three were women, and one a child. The solution used in each case was Barker's stovaine-glucose solution.

For operations upon the abdomen and lower limbs the lateral posture was used for the injection; for perineal, the sitting-up posture. The height of anaesthesia reached in each case was carefully noted and found to be usually the nipple line, although in some cases it extended a little higher.

The average time at which anaesthesia was complete was found to be three and a quarter minutes, the moment of injection being carefully recorded in each case. The duration of the anaesthesia was found to be ample for the cases under consideration, lasting usually fifty to sixty minutes, though in some cases longer.

Three complete failures to obtain anaesthesia occurred, but in each of these I have reason to believe that I was myself to blame for faulty technique, as they were all early cases. No failures occurred in the later cases.

After-Effects.

No serious untoward effects were observed either during or after the injections. A few patients experienced slight dyspnoea during abdominal operations if the anaesthesia reached above the nipple line, but this disappeared rapidly on slightly elevating the shoulders and head.

Slight headache occurred in one or two cases after operation, but was immediately abolished by the administration of phenacetin and caffeine. I believe that this headache is entirely due to unskilful handling of the patient, because I notice that if the patient be moved with extreme care no headache occurs. To minimize the shaking of the patient it is a good plan to have under the body a canvas stretcher upon which the patient can be moved from the table to his bed by the insertion of two bamboo poles—the table having previously been wheeled alongside the bed. If great attention is paid to these details I am sure no headache should ever occur.

Cases.

The total number of cases was 170. The more important were as follows:

Appendicectomy	23	Hernia	23
Removal of loose cartilage	11	Hydrocele	8
Circumcision	14	Varicose veins	11
Aneurysm of popliteal artery	1	Varicocele	20
		Wheelhouse	1
Amputation of thigh ...	1	Salpingitis	1
Haemorrhoids	19		

Advantages.

The principal advantages of spinal anaesthesia are the perfect relaxation obtained in abdominal and rectal operations. The portability of the necessary apparatus is also a great advantage, especially under tropical conditions where it is often difficult to obtain an anaesthetist. Shock and respiratory disturbance are also greatly diminished, and this tends to a healthier convalescence. As regards the patient's choice, I have always found that when patients have submitted to both general and spinal anaesthesia they invariably prefer the latter. It was very noticeable that in a regiment soldiers frequently asked to

FIG. 1.—Case I.

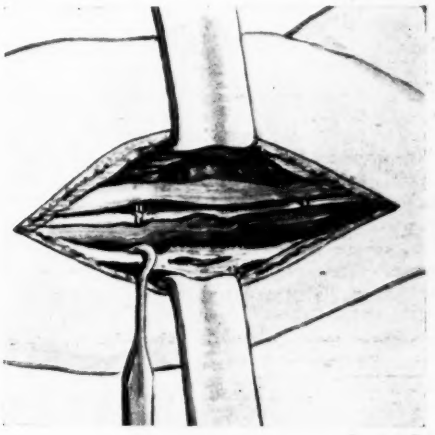


FIG. 4.—Case V.

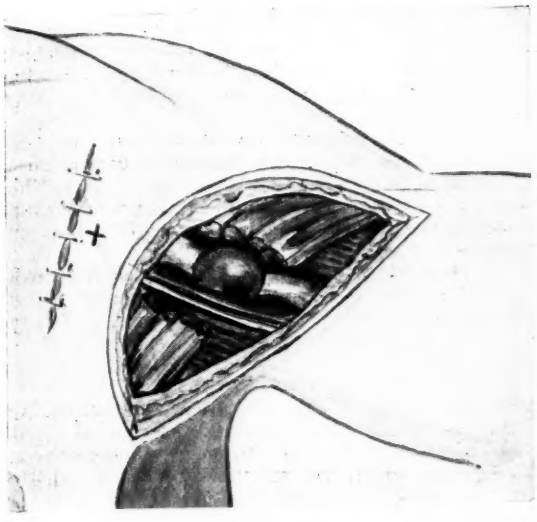


FIG. 2.—Case III.

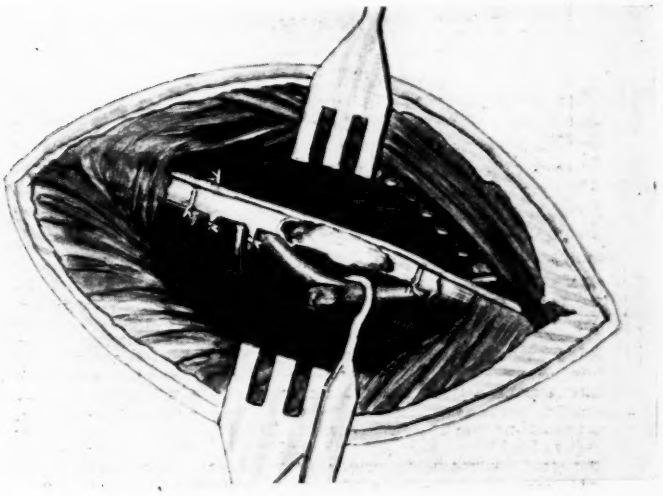


FIG. 5.—Case X.

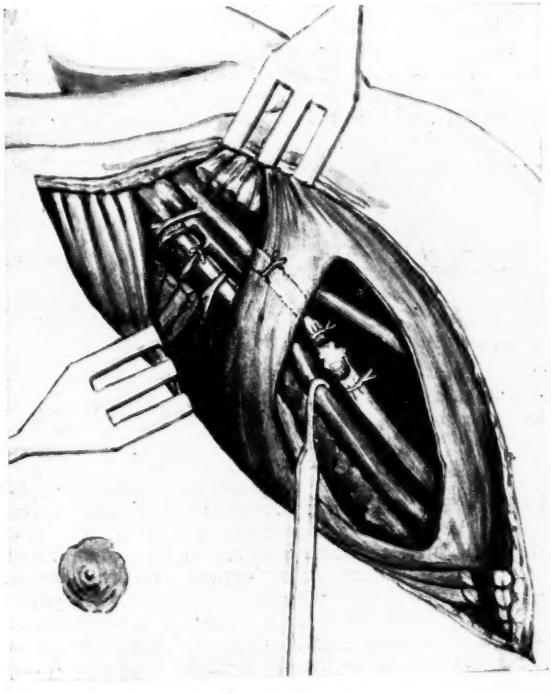


FIG. 3.—Case IV

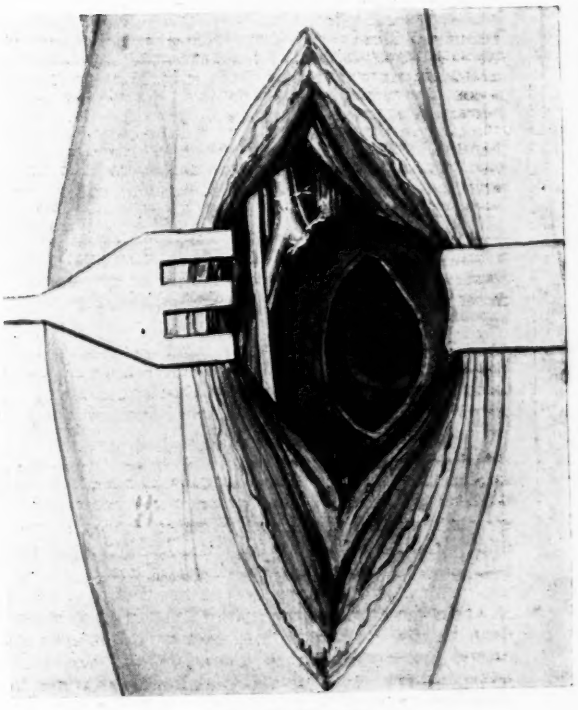


FIG. 6.—Case XII.

N. H. MUMMERY AND P. L. GIUSEPPI: COMMINUTED FRACTURE OF HUMERUS PRODUCED BY MUSCULAR ACTION.

FIG. 1.—Right humerus; anterior view. Photograph taken at time of accident.

FIG. 2.—Right humerus; external view. Photograph taken at time of accident.

FIG. 3.—Right humerus; anterior view. Photograph taken twenty-four days after operation.

FIG. 4.—Right humerus; external view. Photograph taken twenty-four days after operation.

have spinal anaesthesia "because their pals had had it," in preference to a general anaesthetic.

Disadvantages.

These are mostly attributable to lack of experience, the more practised one becomes in the technique the less do the disadvantages become. The main one, however, is the limitation of the sphere of the operation to parts of the body below the nipple line.

COMMINUTED FRACTURE OF THE HUMERUS PRODUCED BY MUSCULAR ACTION.

BY

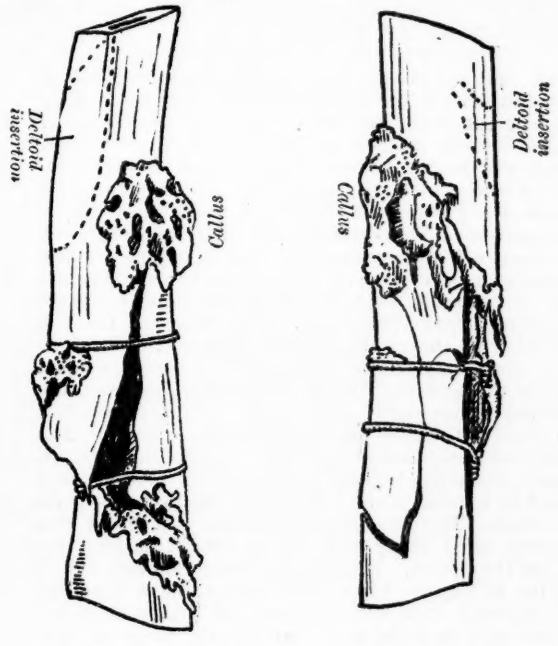
CAPTAIN N. HOWARD MUMMERY, R.A.M.C.(TEMP.),
OFFICER IN CHARGE, CLIFF MILITARY HOSPITAL, FELIXSTOWE,
AND
P. L. GIUSEPPI, M.D.LOND., F.R.C.S.,
CIVIL SURGEON, CLIFF MILITARY HOSPITAL, FELIXSTOWE.

(*With Special Plate.*)

THE interest of the following case lies in the fact that there can be no doubt that the fracture was due to sudden and forcible contraction of the deltoid.

Corporal A. B., aged 33, was admitted to the hospital on April 26th, 1916, having sustained a fracture of the right humerus.

The accident had occurred half an hour previously. He was being instructed with a squad of other men in throwing hand grenades. The grenades are known as



Anterior view. Posterior view.

RIGHT HUMERUS.

"Mills," and were being used empty. They are about the size of a duck's egg, made of steel, and weigh just over two pounds. They should be thrown by an action somewhat similar to that of bowling in cricket. This man, however, not understanding the method, raised the grenade up to and behind his shoulder, as in the first position for "chucking it," as one would do in throwing a stone, and he did this suddenly and with a jerk. He felt his arm break, and it and the grenade, which had not yet left his hand, dropped. The officer in charge of the party saw the accident happen, as did several other men, and there is no question as to this having been the exact method of its occurrence. The patient was an exceedingly muscular man, with thirteen years' service, who had never had any serious illness nor previously broken a bone. He went to the front in December, 1914, and in January, 1916, was wounded by shrapnel in the right elbow. The wound was superficial, and no fragments penetrated, although, owing to sepsis, it took two months to heal. No disability of the arm resulted.

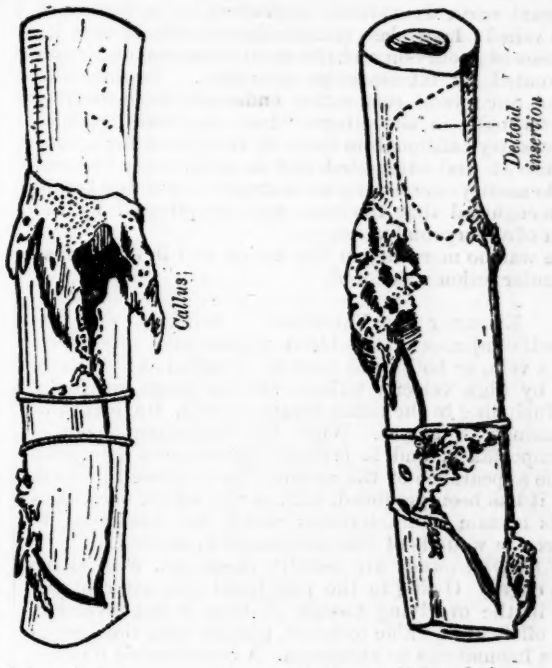
X-ray photos showed the fracture to be comminuted. There was a spiral fracture of the shaft, and apparently three fragments. In the lateral view a portion of the shaft at about the middle of the bone was separated and lying loose. The upper fragment, into which the deltoid was inserted, was abducted.

Operation.

On May 1st a free incision was made on the outer aspect of the arm, and after considerable trouble, caused by the thickness of the muscles, the site of the fracture was exposed. It was not found possible to plate the fragments, and accordingly two stout silver wires were passed round the humerus after first detaching the musculo-spiral nerve from its groove and holding it aside.

On completion of the operation the fragments were found to be rigidly held together by the wires. The arm was put up on a triangular splint. At the time of the operation no osteomyelitis or other disease of the bone could be detected. Early massage, movements, and electrical treatment were employed, and good union and function resulted.

On June 10th—a month and a half after the accident—the patient suddenly died under an anaesthetic, which was being administered in order to break down a few adhesions in the elbow-joint. *Post-mortem* examination showed fatty changes in the myocardium and well-marked healed tubercle of the apex of each lung. Examination of the fracture revealed good union, and



Internal view. External view.

RIGHT HUMERUS.

no evidence whatever of any disease of the bone, nor was any necrosis present.

It was found that there were four fragments, the largest of which was the upper one, into which the deltoid was inserted. The fragments were well held together by the wires, even after the specimen removed at the *post-mortem* examination had been boiled.

We have published this case, as it must be rare to find an instance of comminuted fracture of the humerus produced by muscular action and to have the opportunity of examining it, whilst still recent, *post-mortem*.

Drawings made by one of us of the *post-mortem* specimen are appended, as are also the radiograms taken at the time of the accident and after wiring. (See Special Plate.)

The *post-mortem* specimen may be seen in the War Office collection at the Museum of the Royal College of Surgeons.

PROJECTILE INJURIES OF BLOOD VESSELS;

WITH SPECIAL REFERENCE TO ANEURYSM AND THE INTRASACCULAR OPERATION.

BY

WILLIAM PEARSON, F.R.C.S.I., MAJOR R.A.M.C.(TEMP.),

SURGEON TO THE ADELAIDE HOSPITAL, DUBLIN.

THE surgery of the vascular system has received considerable attention in recent years, and owing to the work of Carrel, Matas, Murphy, Halsted, and others, suturing and plastic work on blood vessels have become established as rational surgical procedures. It may be anticipated that such advances can be extensively employed in the large number of cases of vascular injuries occurring in the present war, with proportionally improved results; nevertheless, experience shows that suturing or anastomosis is applicable only in a comparatively small number of cases, and that ligation is still the most suitable operation for the majority, and will in every case effect a cure if the injury to the vessel be attacked directly by the intrasaccular route.

During the past nine months, excluding several cases of intracranial vascular injuries and some cases of ordinary secondary haemorrhage, I have operated on fourteen cases for lesions of the blood vessels. The views expressed in this paper are based upon the clinical observations and operative findings in these cases, of which the following is a summary:*

Aneurysms 10:—2 axillary, 1 brachial, 1 radial, 1 ulnar, 1 superficial femoral, 1 popliteal, 1 anterior tibial, 1 posterior tibial, 1 ascending pharyngeal; aneurysm and aneurysmal varix 1; varicose aneurysm 1; laceration of femoral vein 1; hour-glass constriction of axillary vein 1.

All cases of aneurysm and the case of varicose aneurysm were treated by intrasaccular operation. In one case (popliteal aneurysm) restorative endo-aneurysmorrhaphy was performed; in the others "trans-saccular ligation" was necessary, although in three of them suturing operations were at first attempted, and in one of these restorative endo-aneurysmorrhaphy was actually completed before it was recognized that the case was complicated by the addition of aneurysmal varix.

There was no mortality in the series, and in every case the vascular lesion was cured.

ETIOLOGY AND VARIETIES OF INJURIES.

Projectile injuries of the blood vessels may involve an artery, a vein, or both, and may be classified as: (1) those caused by high velocity bullets, and (2) those caused by shells, including in the latter shrapnel balls, fragments of shell casings, or bombs. While the distinction is not of great importance, and it is often impossible to determine from the appearance of the vascular lesion alone by which agency it has been produced, still, on the whole, each class presents certain characteristics which are analogous to those seen in wounds of the soft tissues in general.

Rifle bullet wounds are usually clean cut, with sharp smooth edges. Owing to the punctured character of the wound in the overlying tissues (if bone is not involved), sealing off is more liable to occur, usually with the formation of a haematoma or aneurysm. A considerable number of bullet wounds heal aseptically, so that operative interference is often indicated for the vascular sequelae rather than for haemorrhage or sepsis, and may be carried out at the surgeon's leisure.

Shell wounds are usually irregular, with lacerated margins. The wound in the overlying tissues frequently gapes, with loss of substance and irregular lacerated surfaces, so that sealing off is not common, and continued bleeding, requiring immediate or early operation, often occurs. The vast majority of shell wounds are infected and suppurate, so that even if operation has not been performed for primary haemorrhage it soon becomes necessary for sepsis in many cases.

As regards the type of wound inflicted on the vessel, several varieties may be distinguished:

1. Small circular, oval, or irregular wounds involving one side of the vessel.

2. Linear or slit-like openings running in the long axis of the vessel.

3. Large gaping wounds, involving half or more of the circumference, with their upper and lower margins widely retracted from one another, suggesting actual loss of substance.

4. Through-and-through wounds, where the missile has passed right through the lumen of the vessel, producing separate wounds of entrance and exit on opposite sides of it (two cases). This is a rare type, and is very unlikely to occur in shell wounds.

5. Complete division of the vessel, with or without loss of substance. In this type the ends retract, and may be at a considerable distance from one another. This retraction is an important factor in determining natural arrest of haemorrhage, and renders this type of injury less liable to be followed by aneurysm than any of the others.

Further reference to them need not be made here, save to point out that where conservative treatment is desirable type 1 lends itself to treatment by lateral ligation or suture, according as a vein or artery is involved; type 2 may be treated by suture; type 3 will require resection and end-to-end anastomosis; type 4 may be, perhaps, rarely treated by suture, but will more often require resection and anastomosis; type 5 will require resection of both ends and anastomosis.

Frequently, however, such conservative measures will not be practicable, particularly in the latter three groups, and ligation above and below will be necessary. Indeed, where smaller vessels, such as those of the forearm or leg, are involved, and where collateral circulation is good, ligation should be the operation of choice.

ANEURYSM.

Type and Mode of Development.

One of the most important and serious sequelae of injuries of arteries is the development of aneurysm. This is always of the *traumatic* or so-called *false* variety, in which the sac is formed by the surrounding tissues. Following the injury haemorrhage occurs through the opening in the vessel, displacing the soft parts, so that a definite cavity is formed containing the effused blood, which is prevented from escaping externally by the closing in or sealing off of the wound in the overlying tissues. The aneurysm is usually of the sacculated variety, but may be occasionally fusiform when it follows complete division of an artery (two cases). The escape of blood is limited either by the clotting, which arrests the haemorrhage, or when the intrasaccular pressure becomes equal to that in the artery. Almost invariably, however, the surrounding tissues slowly yield more and more, so that in the course of time the aneurysm increases in size. The sac is at first composed of only the surrounding tissues, but these gradually become condensed by pressure and thickened by fibrosis, while a deposit of fibrin takes place on the walls. The sac usually contains soft blood clot, often being filled completely by it except around the opening in the artery. A traumatic aneurysm may follow any of the five types of wounds which have been described, although it is frequently stated that it does not follow extensive wounds, more particularly cases of complete division. The present series of cases demonstrates the inaccuracy of this, but in the latter type of injury the free retraction of the ends of the vessel renders its development less frequent.

Size.

The size of the aneurysm is determined by several factors:

1. The anatomical relationships of the wound, particularly the arrangement of fascial planes, are probably the most important. Where the vessel is surrounded by loose areolar or cellular tissue and no limiting planes of fasciae exist, little resistance is offered to the haemorrhage, which may travel widely, producing a tumour of immense size—a condition sometimes termed diffuse aneurysmal haematoma—or it may even result in rapid and fatal internal haemorrhage.

2. The type of wound in the artery appears to have some influence on the size of the aneurysm. A study of these cases suggests that, other things being equal, an aneurysm resulting from types 1 or 5 will be smaller than

* Since submitting the paper for publication 5 additional cases of aneurysm have been successfully treated by "trans-saccular ligation"—namely, 1 profunda femoral, 1 axillary (first stage), 2 posterior tibial, 1 ulnar. Detailed records of all cases have been kept, but for purposes of publication these have had to be omitted.

cases following types 2, 3, or 4. With either of the former haemorrhage is more gradual and a better chance of early clotting is afforded.

3. The time elapsed since injury. In all cases which were under observation for some weeks the aneurysm definitely increased in size. None showed any tendency to natural cure.

4. The size of the injured artery has very little influence; but, speaking generally, there is some proportion to be observed between the size of the aneurysm and the parent vessel, though there are many exceptions to this.

Occasionally an aneurysm shows considerable variations in size, even from day to day. It is difficult to explain this, except on the supposition that the opening in the artery, or its proximal side, becomes temporarily closed by blood clot, which after a time becomes detached and carried into the sac, thus creating an intermittent pumping action.

Time of Development.

The aneurysm usually forms soon after the wound is inflicted, haemorrhage starting immediately, so that the margins of the opening in the vessel are kept apart and healing prevented. Occasionally in cases of complete division, where the wound has closed immediately and thrombosis has presumably occurred, haemorrhage may be excited and an aneurysm formed at a later period as the result of movement or massage (one case of ulnar aneurysm). It is conceivable that this might also occur after slight partial division of a vessel, where the wound has been primarily filled with blood clot, or its margins sealed by fibrinous exudate. Consequently caution should be exercised in starting early massage or movements when the track of a missile suggests the possibility of arterial injury.

It is stated that rarely an aneurysm may form when a considerable period has elapsed by a gradual yielding and dilatation of the scar tissue which has closed the wound in the vessel.

Symptoms and Signs.

These may vary with the size and position of the aneurysm and with the contents of the sac. A general account of them may be found in any textbook of surgery, but I wish to emphasize some facts in connexion with them which are of importance in regard to diagnosis and treatment. It is convenient to divide them into (i) direct or local, and (ii) indirect or referred groups.

Direct.

(*a*) The tumour is firm and elastic, or even hard in consistence. This is due to the infiltration and organization which occur in the walls of the sac, and to the fact that the latter almost invariably contains blood clot. For this reason also it is not usually reducible, and attempts should never be made to test this owing to the possibility of displacing clot out of the sac and disseminating it into the parent artery or its branches. Tumour may be absent in small or deeply placed aneurysms.

(*b*) Pulsation is usually marked and definitely expansile, but it may be slight and of a transmitted character, or even completely absent when the sac is filled with clot. This does not mean that the aneurysm is about to undergo natural cure; pulsation will probably increase and the aneurysm increase in size while kept under observation. In some cases the pulsation may, like the size, vary much from time to time. The amount of pulsation is no indication of the type of wound in the artery.

(*c*) Thrill is by no means a constant sign. It occurred in only one of ten cases in the present series. When present it is systolic in time, fading away or being completely absent during diastole.

(*d*) The presence of a murmur is very constant. It was present in all cases in which it was investigated, and in two cases which were not diagnosed as aneurysm before operation no examination was made for it. It is definitely systolic and of a blowing character, in some cases soft, in others loud and harsh. Its intensity chiefly depends on the amount of interchange of blood that takes place between the artery and the sac; it is also somewhat dependent on the size of the vessel, and perhaps on the type of opening between the two.

Indirect.

These are due to pressure of the aneurysm on neighbouring structures or to interference with the circulation in the limb.

(*a*) The pulse in the distal part of the artery is diminished in volume; in some cases it is scarcely affected, while in others it is completely absent. Its condition is determined chiefly by the amount of blood which continues to flow through the artery past the aneurysm, and its absence does not indicate that collateral circulation is not well established or that gangrene is threatened.

(*b*) One of the most important and frequent pressure effects is involvement of nerves. With moderate pressure numbness, tingling, or neuralgic pains may be experienced in the area of sensory distribution, with paresis of the muscles supplied by the motor fibres. When pressure is severe there may be complete anaesthesia and paralysis. These pressure palsies are usually more serious than the aneurysm itself, in that they may persist long after the pressure is relieved and the aneurysm cured. The tendency to persist increases out of all proportion to the length of time the pressure has existed, and therefore constitutes an important indication for early operation. A case in which pressure has been severe and prolonged closely resembles one of complete division of a peripheral nerve, both in its clinical manifestations and its mode of recovery, and will require months of post-operative treatment.

(*c*) Contractures may occur in the muscles amongst which an aneurysm is situated. They are much more apt to occur in the flexor groups of muscles in the limbs, and resemble a "Volkmann's contracture" of the forearm. They are probably due to two factors: (i) An involuntary physiological contraction of the muscles in an attempt to relieve pressure and accommodate the tumour, as occurs, for example, in inflammatory torticollis; and (ii) a form of myositis induced by pressure ischaemia. The occurrence of the latter is suggested by the fact that recovery is much more gradual than in cases where simple fixation of the muscles in a shortened position has been maintained for a similar period. Their early post-operative treatment should never be neglected.

(*d*) Gangrene is by no means a common or likely occurrence. In none of my cases was it even threatened, either before or after operation; but it must be remembered that the patients are young men with healthy blood vessels, so that collateral circulation is readily established. The presence of infection will naturally increase the risk of gangrene.

(*e*) Deformity and loss of function may occur from pressure on neighbouring muscles or joints.

ARTERIO-VENOUS ANEURYSM.

Another important and not infrequent sequel of a projectile injury is arterio-venous aneurysm. It consists of an abnormal communication between an artery and a vein, as the result of a penetrating wound which involves both vessels. Two varieties are usually described: (i) Aneurysmal varix, in which the margins of the openings in the vessels are adherent to one another, so that the communication is direct. (ii) Varicose aneurysm, in which the openings in the vessels are connected through the medium of an aneurysmal sac. An unusual form of this which I have not seen described is that in which the sac almost or completely envelops both vessels, so that they lie intrasaccularly, though covered over by a similar fibrinous deposit to that found in the rest of the cavity. In the case referred to the bullet had produced "in and out" wounds of both artery and vein, so that four separate vascular openings existed inside the sac.

Signs and Symptoms.

These show a general resemblance to those exhibited by a simple aneurysm, but the following points will usually permit of a differential diagnosis: (i) An intense vibratory thrill, accentuated at systole, and conducted chiefly along the vein, can be felt on palpation. It is much more marked and continuous in character than that which may be felt over an aneurysm. (ii) A very loud murmur is heard on auscultation, also continuous and accentuated at systole. When analysed it appears to consist of two factors: a continuous venous hum, conducted chiefly in a proximal direction, and an arterial systolic murmur, conducted chiefly in a distal direction. (iii) The veins in the neighbourhood usually become distended and varicosed; but this is only a gradual development and will not be present in the earlier stages. It may also occur in cases

of simple aneurysm, and so cannot be relied on, *per se*, for a differential diagnosis. Varicose aneurysm usually may be distinguished from the other variety by the presence of a definite swelling or tumour, due to the sac, though the possibility of an independent aneurysm should be borne in mind.

TREATMENT OF ANEURYSM.

Natural cure is not to be expected in any case of traumatic aneurysm, but rather a progressive increase in size. Consequently every case should be submitted to operation unless very special contraindications exist.

The Intrasaccular Route.

The best type of operation to perform will depend upon several factors in the individual case; but in every case (excluding those demanding amputation) where the aneurysm is accessible and temporary haemostasis is possible, the intrasaccular route should be followed and the wound in the vessel dealt with directly. The aneurysm should, in fact, be regarded as a slowly progressing internal haemorrhage, and should be treated accordingly. The advantages of this are so numerous and striking that they deserve special emphasis:

1. It is easy. The aneurysm develops in the line of least resistance, usually towards the surface, following the natural planes of cleavage, so that it is generally more accessible than the vessel itself.

2. It is safe. The sac displaces vessels, nerves, and other important structures aside, so that intrasaccular manipulations avoid the risk of anatomical damage.

3. It affords room. When the sac is opened and emptied the advantages of a clear space are secured, comparable to those obtaining in intra-peritoneal operations.

4. A direct view of the wound in the artery is obtained, and the possibility of conservative treatment determined.

5. The cure of the aneurysm is rendered certain by dealing with the vessel directly at its injured part. Especially is this so where an important branch arises opposite the site of injury, as even extrasaccular ligation on both sides may fail to effect a cure in such a case.

6. It produces a minimum of obstruction in the circulation compatible with certainty of cure.

7. All the contents of the sac are removed. This allows the latter to collapse spontaneously or to be obliterated by suture, thus affording immediate relief of pressure on neighbouring structures; it diminishes the risk of subsequent infection, particularly if a projectile is present in the sac; it facilitates restoration of function in the neighbouring muscles and joints; it diminishes the resistance offered to the collateral circulation and to the venous return, thus minimizing the risk of gangrene; it enables displaced structures to resume their normal positions.

Method of Dealing with the Artery.

The ideal operation is conservative and aims at restoring the circulation through the injured vessel, but it is frequently unnecessary, difficult, or impossible to carry out. Where the opening is small and only involves one side of the artery, restorative endo-aneurysmorrhaphy, as advocated by Matas, should be performed. This is also suitable in cases where the wound is of the longitudinal slit-like variety, and occasionally in the in-and-out type. For large gaping wounds involving most of the circumference it is not practicable, and in these, as in cases of complete division, resection and end-to-end anastomosis are necessary if it be considered expedient to preserve the continuity of the artery.

The alternative to these conservative plastic operations is ligation of the vessel above and below the wound. It is a very simple procedure, and is easily accomplished. The margins of the opening are caught in two or three artery forceps, making slight traction on the artery, and its wall is defined and cleared through the fibrinous lining of the sac for a distance of one-third of an inch on either side of the wound—a light touch of the knife, or even blunt dissection alone, suffices to find an easy plane of separation. The procedure may be correctly described as "transsaccular ligation," as the parts ligated really lie outside and not inside the sac. If the artery is only incompletely divided, it is perhaps desirable, though not essential, to make the division complete between the ligatures, and any branch arising from this part of the vessel should also be secured. Where the division has been originally complete both ends must be sought for, usually at a considerable distance from one another or even at opposite poles of the sac, and each ligated in turn. Ligation is indicated in preference to plastic procedures under the following conditions: (1) If the artery is small, unimportant, or difficult of access; (2) if there is infection in the sac; (3) if the extent of the injury is such that suturing or end-to-end anastomosis is impracticable, or very difficult; (4) if the adjacent walls of the artery are injured or diseased, in which cases thrombosis or haemorrhage will probably follow an attempt at suturing; (5) if the patient's condition is such that any prolongation of operation or anaesthesia is undesirable.

Time for Operation.

In the majority of cases the best time to operate is as soon as convenient after the discovery of the aneurysm, provided the surface wounds are *soundly** healed (usually two to four weeks)—that is, as soon as it may be undertaken under ordinary aseptic conditions. By this time collateral circulation will have become established, and the patient will have recovered from initial shock, fatigue, or exhaustion. Earlier operation will be indicated in the presence of signs of infection in the sac, haemorrhage or threatened haemorrhage, rapid increase in the size of the aneurysm, severe persistent pain, and occasionally for increasing signs of pressure on neighbouring structures. The disadvantages of postponing operation to a later period are: Increase in size of the aneurysm; thickening of the sac; increase in amount and duration of pressure on neighbouring structures, particularly nerves; increased difficulty in effecting conservative measures such as end-to-end anastomosis.

Question of Haemostasis.

Haemorrhage from the aneurysm during operation may be controlled either by (1) elastic constriction, (2) the application of clamps to the vessel, or (3) by direct digital pressure applied to the wound in the artery from within the sac.

1. Elastic constriction is the most satisfactory method, but is inapplicable to cases where the aneurysm lies close to the junction of the limb with the body, and to aneurysms of the neck and trunk. I should like to emphasize the fact that constriction should be effected by means of an elastic bandage, and not with the more usual tubular type of rubber tourniquet; the latter produces too narrow and localized a zone of constriction and is much more liable to cause injurious pressure on the tissues. In applying the bandage, the following points should be observed: The limb should be elevated vertically—not bandaged from below upwards—for a short time to allow as much blood as possible to flow out of it; the bandage should be applied well above the aneurysm, so that it may be released by an assistant before the wound is closed without encroaching on the field of operation; endeavour should be made to get the first turn of the bandage just sufficiently tight to control the arterial flow, and subsequent turns should be of similar tension. To do this well some little skill is required on the part of an assistant, but it is really important; if the first few turns of the bandage are applied lightly, and the latter ones with gradually increasing tension, the limb will be in a condition of passive congestion by the time the application is complete.

The advantages of elastic constriction are that it ensures complete haemostasis, it saves time, and when properly applied it is less liable to injure the intima and cause thrombosis of the vessel than is the application of a clamp.

2. Light clamps of Crile's or other pattern may be applied to the artery before the sac is opened. If they are employed, it is desirable to isolate and secure the artery on both sides of the aneurysm, as haemorrhage through the collateral circulation may be quite profuse if only the proximal side is controlled; and even where both are secured bleeding may occur if a branch arises from the intermediate part. Clamps are applicable in many cases where constriction is not; they are readily released and replaced if necessary during the operation, and with a

* About a week should be allowed to elapse after epithelialization is complete before the wounds are considered as "soundly healed." Exfoliating shreds of epidermis should have disappeared, and the skin should be smooth and firm. This condition may be hastened by picric acid dressings.

little care their pressure may be graduated so as not to injure the intima; but time is occupied in exposing the vessel, and the clamps may be accidentally displaced by the operator during subsequent manipulations.

3. Where neither constriction nor clamps are applicable, haemorrhage can certainly be controlled when the aneurysm is opened by the introduction of the left index finger into the sac, and making direct pressure on the wound in the vessel, which can usually be felt distinctly. Even if the vessel has been completely divided and the ends lie some distance apart, they may both be controlled as a rule by introducing the index and middle fingers, and splaying them until each compresses one end. By dissection the vessel can then be exposed, isolated, and secured. It is probably better for the operator to control the bleeding himself than to entrust it to an assistant, even though he is handicapped in the subsequent dissection by having only one hand free.

Technique.

1. At the risk of uttering a surgical platitude it is necessary to emphasize the need for strict asepsis in operative procedures on aneurysms, particularly if conservative measures are to be adopted. If infection occurs where an artery has been sutured, it will almost certainly lead to disaster in the form of secondary haemorrhage, and in the presence of existing infection suturing should not be attempted. The same rule generally holds in dealing with venous injuries, though here it is not so binding; in one obviously septic case the femoral vein was sutured successfully.

Possibly we shall learn in time that greater liberties may be taken in vascular surgery, but at present one does not feel justified in advocating them.

2. As it is impossible to determine by clinical examination what type of wound is present in the artery, all preparations necessary for effecting a plastic procedure should be made before commencing an operation for aneurysm of any of the larger important vessels. The surgeon must be prepared to ligate or suture, according as the operative findings dictate.

3. When the sac has been evacuated, careful and thorough examination should be made to determine the exact nature and extent of the vascular injury. Incomplete recognition of the conditions present may lead the surgeon to waste time in carrying out measures which further investigation proves to be unsuitable.

4. In regard to suturing I have closely followed Carrel's technique, with the details of which most surgeons are familiar. The needles employed are small, round-bodied, either straight or curved, and of the finest pattern. The suture material is fine silk, No. 0 or No. 1, which is sterilized in liquid paraffin at a temperature of 105° C. Carrel advocates the use of vaseline, but I have found liquid paraffin renders the needles and sutures easier to handle, and the results appear to be as good. The sutures are threaded in the needles before sterilization, and all are prepared together. The consensus of opinion now favours silk in preference to catgut, but if vascular suture is attempted in the presence of infection catgut should be employed.

Before suturing, all blood and clot should be carefully washed off the vessel and its surroundings, the edges of the wound should be carefully trimmed with fine sharp scissors if necessary, and the parts should be lightly lubricated with sterile liquid paraffin. Extreme gentleness must be employed in manipulating the wound in the vessel, and the greatest care exercised to avoid injury to the intima, which will probably be followed by thrombosis. Forceps with serrated points must not be used; those with fine spherical ends, as suggested by (I think) Bernheim, are the best, but ordinary forceps may be adapted by stretching some fine rubber tissue over their points.

5. Tension may cause serious difficulty in attempting end-to-end anastomosis in those cases where a portion of the artery has been resected, or where complete division with retraction of the ends has occurred. The artery does not retain its normal extensibility, especially when the aneurysm is of large size and has tracked along the course of the vessel. This appears to be due to "fixation" of its walls by the fibrinous lining of the sac, and it may render anastomosis impracticable in an otherwise suitable case.

6. When restorative endo-aneurysmorrhaphy has been performed, the line of sutures may be strengthened by infolding the sac walls over it by a few stitches. After end-to-end anastomosis the junction may be wrapped snugly in a strip of deep fascia taken from the thigh or other convenient neighbourhood.

7. Removal of the sac is not necessary unless special indications exist. (It was performed in one case in my series where the nerves of the brachial plexus were incorporated in it.) In recent cases the walls readily fall together, even without suture, and attempts to dissect them out sacrifice many of the advantages of intrasaccular operation.

8. Drainage may be advantageously employed for twenty-four hours in the case of large aneurysms.

9. When the track of the missile suggests the possibility of direct injury to a nerve, and pressure palsy exists in a degree compatible with this, the nerve should be examined as soon as the aneurysm has been dealt with. If the nerve lies in close relationship to the aneurysm, it may easily be found by incising the sac wall over it from its interior aspect; when the nerve lies some distance away it should be sought for extrasaccularly, or even through an independent incision. The appropriate treatment of the nerve should then be effected.

TREATMENT OF ARTERIO-VENOUS ANEURYSM.

Many cases of aneurysmal varix cause little or no inconvenience to the patient, and may not require operative treatment. On the other hand, varicose aneurysms present the same needs for treatment as do simple aneurysms.

Aneurysmal varix may be treated either by (1) dividing the connexion between the artery and vein and suturing the opening in each, having first applied constriction to the limb or secured both vessels above and below in clamps; or (2) by ligation of the artery above and below the anastomotic opening, and ligation of any intervening branch.

Varicose aneurysm should be dealt with, where possible, by the intrasaccular route. When the sac has been opened and cleared the wounds in the vessels should be carefully examined and dealt with on their merits. In the case of important vessels ligation of both artery and vein together should be avoided if possible; and when the continuity of one appears to depend on the sacrifice of the other the vein should be preserved rather than the artery, except in the case of the internal carotid and internal jugular vessels, where the former is the more important.

THE PHYSIOLOGICAL WORK OF IVAN PETROVICH PAVLOV.

ABSTRACT OF A LECTURE GIVEN AT UNIVERSITY COLLEGE, LONDON.

BY W. M. BAYLISS, F.R.S.,

PROFESSOR OF GENERAL PHYSIOLOGY IN THE COLLEGE.

ABOUT the beginning of the present year the physiological world received with the greatest regret a report of the death of Professor Pavlov of Petrograd. A few months later a corresponding degree of pleasure was experienced when it was found that Ivan Petrovich Pavlov was still alive and well, and that confusion had been made with a surgeon of the same name.

The frequent spelling of the name as Pawlow, while correct in German, is not so in English. It should be given up, and the spelling here used adopted, as it gives, as nearly as possible, the Russian pronunciation.

There are two large and important regions of physiological work which have been practically created by Pavlov. Although they may appear somewhat widely apart, it will be seen presently how the later work naturally arose from the earlier.

This earlier work was devoted to the function of the digestive glands and the way in which their activity is excited and co-ordinated. Especially it was shown how the process in one part prepares the next following part of the alimentary canal for due treatment of the food when it arrives. The way in which the various glands are set into action and the control of the passage of the food from one section to the next were thoroughly investigated.

One of the most important means used in these researches was the method of making fistulae in various situations. Although salivary and pancreatic fistulae had been made in the seventeenth century by Réné de Graaf, of Delft, the development given to the method by Pavlov made it, to all intents and purposes, a new one. This development was made possible by the introduction into the physiological laboratory of the methods of aseptic surgery. A complete series of sterilizing and operating rooms, together with a hospital for the animals recovering from operations, was established for the first time in connexion with experiments on animals. These arrangements were introduced into England in the new Physiological Institute of University College, London.

In the space here available to me it is impossible to refer to more than a small part of the results obtained. Commencing with the mouth and the secretion of saliva, the effect of the sight and smell of food and other substances in causing "psychical" secretion of saliva of an appropriate kind was investigated. Thus, meat caused the appearance of a small quantity of a viscid secretion, sand or sugar a copious watery secretion. At the same time, provided that the food was received with "appetite," there was a "psychical" secretion of gastric juice. Many experiments on the process of digestion in the stomach were rendered possible by the design of a new form of sample stomach distinct from the main one, so that no food passed into the cavity in which it was desired to observe the secretion. In this new operation, the nervous supply of the sample stomach was preserved intact, obviously a matter of great importance, but absent from the mode of operation used by Heidenhain. Amongst other facts brought out were the inefficacy of the mere mechanical contact of food, or any other substance, with the mucous membrane of the stomach. It was noticed, also, that secretion of gastric juice may be brought about by the action of some chemical substance present in the food or produced by digestion. Pavlov rejected the hypothesis of any direct chemical effect on the glands in favour of that of stimulation of special sensory nerves, on the ground that these substances had no effect when injected into the circulation. But the possibility had not occurred to him that some new chemical substance might be formed in the mucous membrane, carried in the blood current to the glands and set them into activity independently of nervous influence.

It will be obvious that the method of fistulae enabled many other questions to be answered, such as that of the nerves innervating the various glands and the composition of the products of digestion at the different levels of the alimentary canal.

Reference must next be made to the pancreatic secretion produced by the presence of acid in the duodenum. Thus the acid chyme from the stomach causes the inflow of pancreatic juice. The influence of the vagus nerve on the pancreatic secretory process was also made out. The succus entericus appears to be formed in response to the presence of pancreatic juice in a neighbouring section of the small intestine. The discovery of enterokinase, which activates the trypsinogen of the pancreatic juice, belongs also to this series of researches.

Passing to the second great new departure, we may note that as a method it had its origin in the psychical secretion of saliva. It is stated by Pavlov that he had been struck by the change of attitude assumed by the physiologist when he passes from the investigation of the lower nerve centres to that of the higher ones. He regards these latter from the point of view of the psychologist. Although the psychological mode of discussion is, of course, legitimate and valuable, it is clear that a physiological method would throw much light on these obscure processes. What is needed is some way in which we can trace the relation between external phenomena and the reactions of organisms to them, without introducing the complication of consciousness. This is afforded by Pavlov's method of "conditioned reflexes."

It is a matter of some difficulty to give an intelligible account of this method in a small space. A lecture was given by Pavlov himself at the International Congress of Physiologists at Groningen in 1913. A translation of this lecture by Dr. Lovatt Evans was published in this JOURNAL on October 18th, 1913. The kind of phenomena to be considered may be illustrated by one of the simplest of the experiments. When food is presented to a dog with a salivary fistula, a reflex secretion is produced, as we have seen. If a certain bell is rung simultaneously with the presentation of food for a number of times, it is found that the sound of the bell alone is sufficient to excite the secretion, although originally it had no such effect. A new connexion with a system of neurones has been established. But this connexion is easily broken or its effect annulled by inhibition, contrary to the almost mechanical certainty of the lower reflex centres. One of the most characteristic marks of the processes in the highest centres is just this ascendancy of the inhibitory phenomena, and the investigation of the numerous ways in which it is manifested forms a large part of the work hitherto done.

In the initial formation of the conditioned reflex, the slightest extraneous interruption spoils the result for the time. It is further necessary to have a large number of accurate means of exciting the various sense organs. A special laboratory has been erected at Petrograd in order to ensure the adequate fulfilment of the conditions required. We may confidently expect a great number of valuable additions to our knowledge of the cerebral functions from this new laboratory.

The importance of the sense organs and their central connexions is obvious. Pavlov calls the complete mechanisms associated with sensation "analysers," and one of the branches of the research has been the determination of the power of discrimination of these organs in the dog. It is found to be of a very high order, especially in the sense of hearing.

A remarkable fact is that a painful stimulus, such as an electric shock, can be made into a sign for a conditioned reflex. When this takes place, the painful quality of the stimulus is in abeyance through inhibition. Moreover, an inhibitory stimulus can itself be made a sign for a conditioned reflex.

Especially interesting are the cases into which the time element enters. A flash of light, say, is followed regularly by presentation of food at an interval of ten seconds. Then, afterwards, the flash of light alone is succeeded by secretion of saliva, but not until ten seconds has passed from the time of the flash of light. The interval is filled up by an internal inhibition of the secretory centres. This is shown by the fact that an extraneous, indifferent stimulus, not associated with salivary secretion, arriving during this interval evokes an immediate secretion by inhibiting the inhibition already present.

Much of the work is somewhat inaccessible, being published in Russian; but it is to be hoped that before long an account of it in English may be published. Enough has been said in this article to indicate how much research of a fundamental nature has already been done and the wide field awaiting further investigation.

Certain early work of Pavlov's should not be omitted. The nervous supply of the heart was worked out in considerable detail, and the mechanism of the opening of the shell in bivalve molluscs was shown to be of much interest. In the latter, the first direct proof was given that inhibition of the tonic contraction of smooth muscle does not take place in nerve ganglia, but in the substance of the muscle itself.

The charm of Pavlov's character is apparent to all who have had the pleasure of meeting him. The devotion of his students to "Ivan Petrovich" is especially significant and delightful to witness. I would especially mention his generosity to the workers, students, or others who have joined in his researches. They will be the first to acknowledge how the initiation and success of a piece of work was due to his ideas. Yet it is striking to notice how rarely his name appears even as joint author of a paper.

THE forthcoming appearance of a new quarterly periodical, the *American Journal of Syphilis*, is announced. It will be devoted to the study of syphilis in all its phases. The publishers are the C. V. Mosby Company of St. Louis, and the first number will be issued on January 15th, 1917.

THE total number of cases treated in the Pasteur Institute of Tunis in 1915 was 443; from these must be deducted 23, in 15 of which the dog was proved not to be suffering from rabies, and 8 in which treatment was given up by the patient. Five deaths, attributed to severity of infection or late arrival at the institute, occurred under treatment. The total number of cases so far treated there is 5,711, with 18 deaths.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE IMPROVEMENT OF FLY-SPRAYING FLUIDS AND THE CONTROL OF EXPERIMENTAL TRIALS.

In the course of a number of experimental trials of different fly-spraying fluids I found, as is, I believe, the general experience, that when these fluids are used in accordance with the directions they knock down or stupefy but do not kill all the flies; a varying percentage recover after an hour or two. This is especially noticeable when the temperature is at or above 72° F. In some cases, where the spray seemed fairly effective at room temperature (60–65°), it was only necessary to transfer the stupefied flies to a warm room (at 75° F.) when they at once began to recover and speedily regained their full activity. A number of parallel experiments proved that the use of an emulsion of kerosene oil and soft soap, diluted about 1 in 10, killed the flies within a period of twelve to eighteen hours, although it did not stupefy them speedily, as do most of the proprietary sprays. I therefore tried an admixture of the quick action sprays with the oil emulsion fluid, and found that the combination gave excellent results, quickly stupefying the flies on the one hand and preventing their recovery on the other. The oil emulsion used consisted of 3 parts of soft soap, completely melted by heat in 15 parts of water, a proportion up to 100 parts of kerosene or other light burning oil is then added very gradually with thorough agitation by stirring or shaking in a closed vessel between each addition. The resultant emulsion can be kept indefinitely, and may be diluted with water to any extent. For addition to the fly spray allowance must be made for the extent to which they are diluted for use—the quantity of oil emulsion required being 1 in 10 to the water content of the fluid.

The following experiments with a quick action spray with and without the oil emulsion will serve to illustrate the value of the addition.

Experiment 1.

Two wire traps containing large numbers of flies, caught within the previous two hours, were used.

Cage A.—The quick action fluid was diluted 1 in 30 (by the directions 1 in 40 should have been sufficient); this was used to spray the flies in cage A for two minutes.

Cage B.—To 20 c.cm. of this mixture 2 c.cm. of the oil emulsion was added, and the flies in cage B were sprayed with the mixture for two minutes.

The flies in both cages were all incapable of flight or active movement within fifteen minutes, the temperature being 65° F. Both cages were placed in a warm room at 75° F.

After three hours, at least half of the flies in cage A were actively flying or walking, while in cage B only five or six were active.

After seven hours: In cage A 32 were dead and 328 active (mortality, 9 per cent.). In cage B 290 were dead and 52 were active (mortality, 84 per cent.).

Experiment 2.

The flies were sprayed for two and a half minutes; almost all the flies in both cages were down within fifteen minutes. The cages were then put into a warm room at 75° F. After two hours a large number had recovered in the A cage, but only 5 in B. Both cages were left for the night in the warm room.

On the following day a count showed: Cage A, 196 dead, 193 living, mostly active (mortality, 50 per cent.). Cage B, 247 dead, 19 living, but only 5 active (mortality, 91 per cent.).

As an instance showing the susceptibility of flies to drought and the care necessary in the controlling of experimental trials the following may be quoted:

Experiment 3.

Flies (*Musca domestica*) were captured in two wire cages between 1 p.m. and 2.30 p.m. in the same room, the cages being placed about 12 in. apart. The flies in cage A were kept without food or water in a room temperature about 65° F. until 5 p.m. (two and a half hours). In cage B they were kept in the same room, but a plug of cotton-wool soaked in weak syrup was placed in the cage. At 5 p.m. this was removed, and both cages were placed in a warm room at 75° F. for seventeen hours.

In cage A 20 out of 63 were dead (mortality, 31 per cent.). In cage B 6 out of 81 were dead (mortality, 7 per cent.).

A. BACOT,
Medical Entomologist, Lister Institute.

A METHOD OF RENDERING CELLULOID PLASTIC.

Having been somewhat of a pioneer in introducing celluloid to the profession for various surgical purposes which I have indicated in papers, I would like to communicate a discovery I have made recently. One of the difficulties I was unable to solve was how to render celluloid so plastic that it could be moulded into any shape for application in the tissues in certain parts of the body for certain conditions. I made innumerable inquiries from chemists, journals, the Xylonite Company, doctors, etc., but all without avail. Recently, having another matter under consideration, and remembering that ether was used in the preparation of celluloid, it was necessary for me to ascertain whether celluloid would dissolve or soften in ether. This also led me to try chloroform and alcohol. The latter acted slightly, but ether to such a gratifying degree that any shape could be obtained with the greatest ease. Previously I had to rely on boiling, but this was only partly satisfactory; but now, with ether, this difficulty has almost, if not entirely, been overcome. Place the celluloid in ether solution, in a few hours the celluloid will swell slightly and become soft as jelly. Take it out of the solution, mould, and let dry. The celluloid will resume its original thickness and appearance but retain its new shape. Ether also being one of the most powerful bactericides, will effectually sterilize the mould and make it ready for insertion.

Sydney, Australia. G. S. THOMPSON, F.R.C.S.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

ROYAL ALBERT EDWARD INFIRMARY, WIGAN.

RECURRENT INTUSSUSCEPTION: ROUND-CELLED SARCOMA OF THE ILEO-CAECAL VALVE: EXCISION: INTESTINAL ANASTOMOSIS: RECOVERY.

(By C. R. GRAHAM, Senior Honorary Surgeon to the Infirmary.)

A. A., aged 14, was admitted on May 30th, 1916. He had been feeling unwell for the past six weeks with sickness and griping pains in the abdomen. The sickness had only appeared the week before admission. The bowels had acted daily; there had been no diarrhoea nor blood in the stools. Four years ago he had suffered from typhoid fever.

Laparotomy was performed on admission by my colleague Mr. Buchanan, assistant honorary surgeon, and an intussusception involving the ileo-caecal region was reduced without any difficulty. The boy made an excellent recovery, and was discharged on June 19th.

On his arrival home he commenced to vomit, and had pain in the right iliac fossa. He was confined to bed, and as the sickness and pain continued he was readmitted to the infirmary on June 29th. Nothing abnormal could be felt in the abdomen, and as his symptoms gradually subsided he was discharged on July 3rd.

On July 11th, immediately after dinner, he felt sick and vomited. He complained of abdominal pain, which was referred to the left side of the umbilicus. The same evening, as he did not improve, he was again taken to the infirmary. Palpation did not reveal any tumour, and there was no distension of the abdomen, but there was intense pain referred to the umbilical region.

Laparotomy was again performed on July 14th, and an indurated mass the size of a pullet's egg was discovered deep down in the right iliac fossa. This proved to be a well-marked intussusception, with considerable thickening in the vicinity of the ileo-caecal valve and adjoining caecum. The intussusception could not be reduced. The lumen of the bowel was not greater than that of a crow's quill. The ileum, about 4 in. from the ileo-caecal valve, and the whole of the caecum were excised, anastomosis being effected by means of a Murphy's button.

The patient made an uninterrupted recovery, his condition at no time causing any anxiety. He was discharged quite well on August 6th. The button was recovered on the sixth day after operation.

Sections made from the indurated portion of bowel showed the structure of a small round-celled sarcoma.

Reports of Societies.

ACQUIRED SYPHILIS OF THE LUNGS.

AT a meeting of the Section of Medicine of the Royal Society of Medicine on November 28th Dr. F. PARKES WEBER read a paper on acquired syphilis of the lungs. After describing six cases of chronic non-tuberculous disease of the lung, three of which he regarded as syphilitic and three as probably of the same nature, Dr. Weber said that while he was physician to the Mount Vernon Hospital for Diseases of the Chest he practically never saw a case which he could regard as one of pulmonary syphilis, but recently had met with several in which he believed that that diagnosis could be made with more or less probability. Many writers on the subject had had the opportunity of making *post-mortem* examinations. The chief pathological features were: (1) Gummatous formation with a tendency to necrotic changes, and (2) more chronic and often widely-spread fibrotic changes tending to become associated with bronchiectatic dilatations. In the cases now described he thought that the changes were chiefly of the fibrotic order, though gummatous formation might also have occurred, especially in two of them. According to T. Tanaka, the histology of the pulmonary indurative changes of acquired syphilis was very similar to that of the so-called "white pneumonia" of congenital syphilis. The most characteristic features were much endarteritis obliterans, together with periarteritis and endophlebitis. Mesarteritis also occurred, and in three cases Tanaka found a noteworthy increase of the unstriped muscle tissue, which he regarded as derived from the walls of the small bronchi. In making a diagnosis the question of there being an aortic aneurysm or mediastinal new growth might arise, especially if the left recurrent laryngeal nerve were paralysed. But the distinction from tuberculosis was the chief difficulty, for in tertiary syphilitic diseases of the lungs there might be pyrexia—the so-called "tertiary syphilitic fever," such as not very rarely occurred in tertiary syphilitic disease of the liver, or a complicating fever due to associated bronchitic and bronchiectatic changes with purulent discharge. Moreover, there might be also (though less frequently and in less severe degree than in tuberculosis) night sweats, emaciation, haemoptysis, and copious nummular muco-purulent sputum. In pulmonary syphilis, however, the lower parts of the lung were generally chiefly involved, and the absence of tubercle bacilli in the sputum on frequently repeated examinations, together with a history of past syphilis, evidence of tertiary syphilitic lesions elsewhere, and a positive Wassermann reaction, ought to turn one's attention in that direction. This had been done in one of his cases, that of a man, by a patch of syphilitic leucodermia, a lesion very rare in men. The possibility of the coexistence of syphilitic ulcers or stenoses in the bronchial tubes, trachea, or larynx must be borne in mind. Stengel (1913) pointed out that one of the most suspicious symptoms was intense dyspnoea of more or less spasmodic type, with a tendency to stridor and cyanosis, all indicative of obstruction in the larger air passages. In some cases the respiratory symptoms were altogether much more severe than the ordinary physical signs in the lungs would lead the physician to expect. There might also be recurrent severe spasmodic attacks of coughing accompanied by more or less copious muco-purulent expectoration. In some cases pleurisy and pleuritic effusion might be associated with pulmonary (gummatous) syphilis, as they probably were in one of his cases. The therapeutic test was always of extreme importance, especially when the patient was found to derive obvious benefit from the use of potassium iodide, a drug which sometimes aggravated the symptoms in pulmonary tuberculosis. Old cicatricial stenoses of the respiratory passages could not, of course, be removed by antisyphilitic treatment. Pulmonary tuberculosis was not rare in syphilitic subjects, and vice versa, and tuberculous patients not very rarely acquired syphilis. He did not think that either of the two diseases had much effect, either good or bad, on the course of the other, unless one or both of them had been sufficiently severe to produce a condition of cachexia and to lower the resistance of the body towards the disease. Pulmonary tuberculosis, as far as he could judge, was uninfluenced by the presence of an old quiescent syphilitic taint. Though by some an antagonism between the two diseases had been supposed to exist, it was more probable that syphilis predisposed to tuberculosis in so far as it lowered the vitality of the organism; it was not unlikely that syphilitic tissues, as had been maintained, constituted a specially favourable soil for the growth and multiplication within the body of tubercle bacilli. When the tuberculosis was active and the syphilis quiescent or obsolete, the former dominated the whole clinical aspect and the prognosis, and the effect of energetic antisyphilitic treatment by mercury and potassium iodide was not likely to be bad. Though salvarsan and neo-salvarsan seemed to do no harm in ordinary cases of pulmonary tuberculosis, yet, as far as he knew, they did no good.

UTERUS REMOVED FOR OBSTETRICAL RUPTURE.

AT a meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland, when Dr. GIBBON FITZ-GIBBON was in the chair, the President of the Academy, Dr. PUREFOY, showed the body of the uterus removed by abdominal hysterectomy from a parturient woman shortly after rupture had occurred. She was a young 3-para, having a history of difficulty in former labours owing to slight pelvic narrowing. Soon after admission a brow presentation was diagnosed. This was converted into a vertex, and the presenting part had nearly reached the outlet when signs and symptoms of ruptured uterus became manifest. On making abdominal section the fetal body and extremities came into view, having escaped through a large, irregular rent, involving the anterior vaginal fornix and lower uterine segment. In the presence of such conditions the immediate question to decide was, after a rapid extraction of the fetus, whether to repair or to remove the uterus. The former plan he regarded as a counsel of perfection, to be kept steadily in view, and to be carried out if the patient's condition warranted the attempt. In the present instance removal seemed the wiser course, and it was concluded with all possible speed. Convalescence had been slow, but seemed likely to be quite satisfactory.

Dr. HASTINGS TWEEDY said that he had, through the kindness of Dr. Purefoy, an opportunity of seeing his patient and helping at the operation. Tears such as this one, he believed, were always due to some previous tearing of the cervix, and the commonest cause of such a tear was the application of forceps before the os was fully open. When once the cervix was torn it was an easy matter to have an extension of the rent, though an interval of years might elapse between the primary and secondary rupture. He believed that better results all round were obtained by means of a plug than through abdominal section. The plug had two objects: (1) To stop immediate bleeding, and (2) to counteract shock by preventing prolapse of the intestinal contents and the entrance of air or micro-organisms through the vagina. Very few people understood how to apply a plug. At one autopsy he had observed a ribbon of iodoform gauze pushed up to the surface of the liver. This did more harm than good. A large piece of gauze should be bunched in the hand, as a housemaid bunches a duster, and this large mass should be pushed into the rent, but not through it. In this way haemorrhage was controlled and the intestinal contents were prevented from prolapsing. It was a misnomer to talk about immediate abdominal section for rupture of the uterus. In the majority of instances it took over an hour from the time operation was decided upon to its actual accomplishment.

Sir WILLIAM SMYLY said that the cause of the rupture in this case was obscure. But in a large proportion of cases of malpresentation of the head it was held in its faulty attitude by the lower uterine segment, and for that reason attempts at rectification were necessarily attended with risk.

SCREENING AND RADIUM DOSAGE.

AT a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland on October 27th, when Mr. TAYLOR was in the chair, Captain WALTER C. STEVENSON read a paper on screening and radium dosage. He used the total amount of ionization effected on the

tissue by the radio-active agent as his basis of measurement. The total amount of ionization was obtained by multiplying the average amount of radium emanation used in a treatment by the time of employment in hours, and by the proportion of activity remaining after the rays traversed the screen, as shown by the electroscope. He cited his experience with a patient having an extensive port-wine mark where a similar extent of superficial reaction, as far as could be judged by the naked eye, resulted from radiation without a screen, and with various thicknesses of lead screens, provided the loss of activity of the emanation due to screening was compensated for by longer exposure, so that the total ionization was the same in each case. He pointed out the importance of the screening effect of the tissues on the uniformity of radiation, basing his contentions on electroscopic experiments with various thicknesses of beef, from 1 mm. to 30 cm. thickness. He found that lead had approximately ten times the screening power of animal tissues. As an illustration of an efficient dose, he alluded to a patient shown to the meeting who, to all appearances, was cured for over a year of a tumour of the palate, 2 cm. across, which was proved histologically to be a very malignant type of epithelioma. The patient was treated with six radium emanation needles for three hours, the dose being recorded as 23.3 (6) 3 = 70 millicurie hours. In the estimation of a dose, the cubic contents and shape of a tumour, the amount of screening and the number of foci of radiation used in a given area must *inter alia* be taken into consideration. When employing needles of a standard thickness of steel the amount of screening from them was constant, while the loss of activity due to the tissues—that is, the uniformity of radiation—depended on the distance of the needles from one another.

Reviews.

SOCIAL, HYGIENIC, AND MEDICAL ASPECTS OF OCCUPATIONS.

AN interesting treatise on *Occupations*,[1] by Sir THOMAS OLIVER, has most opportunely been issued in the Cambridge Public Health Series, and should be read by all those who in consequence of altered conditions of labour at the present time have to do with workers new to the various trades they have recently taken up.

The author points out that the fatigue experienced by the modern factory hand is not that which follows hard muscular labour in the open air; its cause is different; into it there enters greater mental strain, and the work is carried on in overheated, moist, and often imperfectly ventilated rooms. He reminds us that the intentions of those who passed the Elizabethan Poor Law of 1601 may have been good, since the law directed that destitute children and orphans should be apprenticed to some trade; but this permission was abused in the early years of last century, when it was seen that machinery could be so easily tended that a large amount of unskilled labour, including that of women and children, was drawn into the factory. Despite the sorry conditions caused among numerous children it was not till 1819 that an Act was passed which limited the age at which children should begin work in factories to nine years.

The age and working capacity of men and women from an insurance point of view is well dealt with, and there is a thoughtful chapter on strain and fatigue. We heartily concur in the opinion that between night and morning there is not always sufficient time for the fatigue products of the day's work to be got rid of, and that in this way a cumulative effect may be brought about. Work done by muscle already tired is more harmful than work attempted under normal conditions. A worker therefore who continues to work when he or she is fatigued not only does less effective work, but is doing himself or herself a physical injury. It is necessary that fatigue should be met by rest; it is here that the seventh day's rest comes in most helpfully, for recovery from over-fatigue may be a slow process. These views find much support in the facts and recommendations set out by the Health of Munition Workers Committee in its various memorandums which have been noted from time to time in our columns.

Very many trades are submitted to investigation in this treatise, and none appears to be free from some harmful conditions. From flower making and feather curling, through the various grades of manual work till we come to brick making, there are conditions which, in present circumstances of work, may injure the workers' health. In the moulding and stacking of bricks a woman will lift 28 tons, for which work she receives 2s. 8d., or a little more than 1d. a ton, a sum of money which scarcely provides for the bare necessaries of life, while in the brick fields the men work equally hard, so that by the time they reach the age of 40 they are old and crippled with rheumatism. The book lifts for a moment the veil which usually hides the conditions of workers in many trades.

[1] *Occupations from the Social, Hygienic and Medical Points of View.* By Sir T. Oliver, M.A., M.D., LL.D., D.Sc., F.R.C.P. Cambridge Public Health Series, under the editorship of G. S. Graham-Smith, M.D., and J. E. Purvis, M.A. Cambridge: The University Press. 1916. (Demy 8vo, pp. 120; 2 charts. 6s. net.)

OBSTETRICS.

PROFESSOR SHEARS'S *Obstetrics, Normal and Operative*,[2] is confessedly the outcome of his disapproval of all other extant textbooks. His main complaint with those is that they devote to the discussion of such "irrelevant matter" as the cause of menstruation, fetal monstrosities, and the history of the Chamberlen family, valuable space which might be used for a discussion of the causes of fetal mortality in labour and other such topics of direct practical importance. Certainly the author omits all the usual anatomical and physiological matter for so many years included in obstetrical textbooks, but as the student will not find these subjects discussed anywhere else in such detail or with such accuracy, he will, after reading Professor Shears's book, be compelled to go to one or other of the despised textbooks. Further, the author's contempt for fetal monstrosities is so supreme that he has illustrated the subject of anencephaly with a drawing that bears no resemblance to the condition as usually observed!

The reiterated and often carping criticisms of all other textbooks are not only blots upon the present work, but sharpen the reader's critical faculties. It is a pleasure, therefore, to be able to give unqualified praise to the photographs of the delivery of the head and placenta, and of several other important points in practice. These the author frankly claims as "unequalled," and we entirely agree with him. The other illustrations are for the most part good, many being borrowed from the well known and popular book by Professor Fabre of Lyon, to whom in several other respects the author's teaching appears to owe much.

The section on the management of labour is full and excellent. On the much debated point of the value of scopolamine-morphine narcosis the writer is not very helpful, as his practice is neither one thing nor the other—merely a modified analgesia, with no attempt at the production of amnesia. We would emphasize the author's statement that the exhibition of pituitary extract in the second stage of labour sometimes leads to exhaustion of the uterus in the third stage, with consequent haemorrhage. In regard to early rising after labour, a subject which has now very largely dropped into merited oblivion, Professor Shears says that "this proposal has been summarily and deservedly rejected by the common sense of the profession. It is based upon the idea that labour is a purely normal, physiological process," a proposition "theoretically rather than practically true."

Professor Shears believes that during pregnancy the blood of the mother is in a condition of suboxidation, and he regards this as an important factor in the toxaemias. His opinion that eclampsia is more common in the remote and sparsely populated regions than in cities and suburban localities is diametrically opposed to experience in this country. The suggestion merits further investigation. In regard to some points of treatment the author holds views which are unusual—as, for example, his advocacy of version in occipito-posterior positions seen early.

Professor Shears's book contains much that is interesting and good, and as the outcome of a mind untrammelled by authority or tradition it is a welcome stimulant. But frankly we doubt if his constant demonstrations of the motes in the eyes of other teachers will make his book popular outside his own school.

[2] *Obstetrics, Normal and Operative.* By G. P. Shears, B.S., M.D. Philadelphia and London: J. B. Lippincott Co. 1916. (Med. 8vo, pp 765; 419 figures. 25s. net.)

GUNSHOT WOUNDS OF BONES AND JOINTS.

THE war has given rise to vast numbers of gunshot wounds involving the bones and joints, causing fracture, osteomyelitis, or arthritis, as the case may be. Dr. A. BROCA, professor of topographical anatomy in Paris, has written an excellent account of these osteo-articular sequelae of wounds for the French *Collection Horizon*,[3] that may be warmly recommended to the attention of surgeons.

As he says in his preface, it is to be feared that the dangers of excessive formation of callus, faulty reposition of fractured bones, the formation of sinuses and sequestrums by chronic osteomyelitis, and the late consequences of injuries of the joints, may all be underestimated by optimistic surgeons. These dangers are considered in the first four chapters of the book; the fifth chapter deals with the thorny problems confronting medical boards and others who have to deal with the future of soldiers who have been more or less crippled, with pensions and gratuities, and with men who have refused the treatments advised. The book is well written, and is illustrated with diagrams, which have the effect of stipple drawings. Professor Broca calls special attention to the method in his preface, and expresses the opinion, in which we are disposed to agree with him, that good drawings, made by competent hands, convey a more accurate and instructive impression of *x*-ray pictures than photographic reproductions from the original skiagrams.

Details of the treatment Professor Broca prefers in the various types of injury discussed are fully stated. The book is the work of a conservative surgeon of great experience, and will be found of the highest practical value by surgeons at the present day.

SCHOOL HYGIENE.

Two well-known handbooks on school hygiene reappear this year under the authorship of men other than those originally responsible for them. Newsholme's *School Hygiene*,[4] which originally appeared in 1887, has now reached the fourteenth edition, and this is a new book written by Dr. JAMES KERR, whose work for the Bradford and London School Boards, and later the London County Council, is so well known. Crowley's *Hygiene of School Life*[5] was issued first in 1909, and the new edition is written by Dr. C. W. HUTT, so that Bradford again has the honour of having as its school doctor an author of evident breadth of thought and progressive sympathies.

The two books, although professedly covering the same field of work, show a considerable difference in the manner in which they deal with that work. Dr. Kerr's is concerned very much the more with the child as the principal factor in the school. As one reads chapter after chapter—and it is an eminently readable book—the dominant impression is the child. All the rest—the teacher, the buildings and their appurtenances, and the whole scheme of education which centres round or radiates from the child—they are there in the periphery of the field of vision but not at the fovea. Dr. Hutt's book does not fail to realize that this is the chief focus of the school; but nevertheless the strongest impression left upon the mind is one of the greatness of the school and of the whole organization of which it is a part. It is as though we asked two friends their impressions of a lady, and the one described to us the beauty and grace of her person and the charm of her intellect, whereas the other expatiated upon the perfection of her toilet, the elegance of her garments, and the finished style of her deportment. We like these attributes, all of them, but in what proportions? If a school teacher asked us to recommend a book on school hygiene we should suggest Kerr's as the one to be studied; if a town councillor, new to his office and anxious to do his duty conscientiously, desired information on the work of the schools we should urge him to read Hutt's book. But if the inquirer were a doctor, possibly one engaging for the first time in some part of the work of the school medical service, we should urge him to read both and balance the impressions, for both are necessary to him.

Dr. Kerr's book is divided into two unequal sections—Part I, the greater, deals with the child. There is a chapter on physiology and psychology. Later chapters deal with special conditions and defects. The chapter on speech is admirable; there are few such brief and explicit summaries of this complex faculty and its disorders. In other chapters the effects of open-air life, excessive mental exercise and fatigue, the necessity for sleep and rest, are dealt with. In others special defects, such as those of the eyes, ear, local defects of the throat, and the graver problem of the abnormal children, receive consideration. Part II deals with the "Apparatus of a School," sites and buildings, ventilation, warming, lighting, furniture, and the like. In these subjects the author is much at home, and the pages are illuminated by references to research work, for the initiation or performance of which the author has been responsible; and from that work have come effects which have greatly helped to bring everyday practice up to the present high level of achievement.

Dr. Hutt's book commences with an excellent sketch of the origin and progress of school medical inspection both at home and abroad, with a summary of the several Acts of Parliament affecting school work in this country. Based on these are brief excursions into the object of medical inspections and the character and degree of these inspections, and of the school medical service. In this section the author considers the relation of the school service to the public health service. He concludes that

> the most satisfactory organization of the work of the school medical officer in relation to that of the medical officer of health has perhaps yet to be ascertained. While essentially a department of the public health which can allow itself in no way to be looked upon as a subsidiary department, it is, nevertheless, a department which can never know its own full development unless it recognizes itself as part of the whole public health service of the country and links itself up, and has an organic relation with, that service. To secure this unity in all matters relating to the public health it would seem that the formation of a Ministry of Public Health has become necessary, and, as a consequence, the organization of a public health medical service on the lines of the naval, military, and Indian medical services, due regard being paid to the principles of local government.

In considering the various types of child and the defects of children, Dr. Hutt is at pains to give references to quite recent work, and this is a feature of no inconsiderable value in the book. The chapter on school baths and bathing is admirable, and the reproductions of photographs of the baths provided for the children in the elementary schools at Bradford are such that we would desire the like to be in every school in the country. We entirely endorse the statement of the author:

> Any one acquainted with the condition of the children in a school situated in the poorer quarters of a city cannot but be impressed with the obvious fact that before any instruction of the children is attempted they need, so soon as they have been properly fed, to be thoroughly washed.

A little book entitled, *The Nation of the Future*,[6] issued by Dr. HADEN GUEST, is a collection of papers originally issued in various periodical publications. The book is for the most part a description of the more ordinary methods of physical examination of children in elementary schools, and there are several reproductions of photographs of the author making such examinations in London schools. Such photographs do not serve any very useful purpose, for who has not seen the examination of the chest of a child? There are excursions into general policy of national health and infant care. So far as any contribution to the problem of child health is suggested, it is to be found in the author's evident feeling that the separation of the school clinic from the larger field of the health of child and child-bearer, the infant and the mother, is an evil that must be adjusted. One solution of this problem would appear to have been found in the New York scheme. In Dr. Hutt's book there is a note on the constitution of the Division of Child Hygiene of the Department of Health for that city:

> The division deals with all children from birth to the legal working age; its work comprises:
> 1. The control and supervision of midwives.
> 2. The reduction of infant mortality.
> 3. The supervision of foundling babies boarded out in private houses.

[3] *Les séquelles ostéo-articulaires des plaies de guerre.* Par Prof. A. Broca. Collection Horizon: Précis de Médecine et de Chirurgie de Guerre. Paris: Masson et Cie. 1916. (Cr. 8vo, pp. 177; 112 figures. Fr.4.)

[4] *Newsholme's School Hygiene: The Laws of Health in Relation to School Life.* Rewritten for all school workers by J. Kerr, M.A., M.D. New edition. London: G. Allen and Unwin, Ltd. 1916. (Post 8vo, pp. 352; 48 figures. 4s. 6d. net.)

[5] *Crowley's Hygiene of School Life.* By C. W. Hutt, M.A., M.D.Cantab., D.P.H.Oxford. Second edition. London: Methuen and Co., Ltd. 1916. (Post 8vo, pp. 443; 20 illustrations. 3s. 6d. net.)

[6] *The Nation of the Future.* By L. Haden Guest, M.R.C.S.Eng., L.R.C.P.Lond., temporary Captain, R.A.M.C. London: G. Bell and Sons. 1916. (Cr. 8vo, pp. 115; 8 illustrations. 2s. net.)

4. The inspection and sanitary supervision of day nurseries.
5. The inspection of institutions harbouring dependent children.
6. The medical inspection and examination of school children.
7. The vaccination of school children.
8. The enforcement of that part of the Child Labour Law which relates to the issuing of employment certificates.

The association of these several services under one control has good features.

NOTES ON BOOKS.

THE third edition of Dr. E. ALBERT-WEIL'S manual of electrotherapy and electrodiagnosis[7] has been brought up to date carefully, and shortened by the omission of the parts in previous editions dealing with the *x* rays. It contains a new chapter on the electrocardiograph, and a particularly interesting account of the forms of electric apparatus of service in the localization of metallic foreign bodies lodged in the tissues. Dr. Albert-Weil sums up in favour of La Baume-Pluvinel's "audioscopic fingerstall" in this connexion. This apparatus is an adaptation of the old Hughes telephone and electric induction balance. The operator has a telephone attached to his head, and on the finger he is going to use for exploration he wears a sterilized fingerstall containing at its tip a small coil of fine wire connected to one arm of the electric balance. When this coil is brought near a metallic fragment the operator is made aware of the fact by the production of a sound in the telephone. It is said that a piece of steel weighing a gram can be detected at a distance of 15 mm. by the use of this apparatus. For the rest, Dr. Albert-Weil's book contains a full account of the apparatus and technique employed in various electrotherapeutic methods, and the results obtained therefrom in various maladies. The text is well written, and there are numerous good illustrations. The volume may be cordially recommended to the attention of medical electricians.

Sister MARTIN-NICHOLSON'S account of her *Experiences on Three Fronts*[8] gives vivid pictures of what she saw, and how she nursed typhoid and surgical cases in Belgium, in Russia, and in France during the earlier part of the war. It is clear that the writer has a seeing eye, quick to catch the essentials of the scenes she has viewed and the various stages she has moved upon. She has, too, a warm heart for her friends, and her book is enriched with many a sentimental passage and pages of highly strung emotions, such as most readers love to harrow them withal. Her characterizations of the national types among the patients she nursed—British, French, Belgian, Russian, Polish, Austrian, and German—are first rate. They combine brevity with justice, and show the skilled exercise of unusually acute powers of observation. The whole book is written in a highly-coloured and vigorous style; it may be cordially recommended to a wide circle of readers—all those who are interested in the war. *With the Russian Wounded*,[9] by TATIANA ALEXINSKY, wife, medical woman, and socialist, gives an account of what the authoress saw and jotted down in her diary during the first year of the war. The book has been prepared for publication by her husband. It forms a most interesting contrast to *My Experiences on Three Fronts*. Sister Martin-Nicholson is a writer who sees more than meets her eye, and interprets what she sees with sympathy. Mme. Alexinsky's diary records the commonplace, and leaves it undigested for the reader. Her interest appears to lie in her own sensations and emotions. Her pages illustrate the difficulties that lie in the path of a self-centred writer at variance with his—or her—surroundings.

The *Medical Directory*[10] for 1917, which has been published this week, does not differ in arrangement from previous recent issues. The total number of names contained in it is 42,879—an increase of 309 as compared with 1916, of 307 as compared with 1915, and of 907 as compared with 1914. The comparative figures for London, the provinces, Wales, Scotland, Ireland, and abroad are at present misleading, as they do not distinguish the large number of medical practitioners serving in the navy or army; in fact, the number shown in the section containing the lists of officers in the naval, military, and Indian Medical Services is rather lower than last year—3,203, as compared with 3,274 in 1916—and still lower than in 1915, when it was 3,366. The general excellence and accuracy of this annual is well known, and has been tested by time, for this is the seventy-third issue. In the very useful abstract of the principal laws affecting the medical profession there is a note on the regulations affecting medical officers in the Territorial Force, with a table of pay and allowances; but, with regard to allowances, it refers only to peace conditions, and we suggest that room should have been found somewhere in the Directory for a concise statement of the terms and conditions of service of temporary medical officers, whose number is now so large, and also of the rates of pensions to disabled officers and to widows and orphans. The volume contains the usual lists of consumption sanatoriums, convalescent institutions, hydropathic establishments, and private asylums, as well as of universities, medical schools and colleges, and hospitals.

[7] *Manuel d'électrothérapie et d'électrodiagnostic.* Par le Dr. E. Albert-Weil. Préface de M. le Prof. A. Gilbert. Troisième édition, entièrement revue et completés. Paris: F. Alcan. 1916. (Cr. 8vo, pp. 384; 108 figures. 4 fr.)

[8] *My Experiences on Three Fronts.* By Sister Martin-Nicholson. London: G. Allen and Unwin, Limited. 1916. (Cr. 8vo, pp. 283; 1 portrait. 4s. 6d. net.)

[9] *With the Russian Wounded.* By Tatiana Alexinsky. With an Introduction by G. Alexinsky. Translated by G. Cannan. London: T. Fisher Unwin, Limited. 1916. (Cr. 8vo, pp. 191. 2s. 6d. net.)

[10] The *Medical Directory*, 1917. Seventy-third annual issue. London: J. and A. Churchill. 1917. (Royal 8vo, pp. 1952. Price (United Kingdom), orders and payment received after September 30th, 1915, 16s. 6d.; abroad, 18s. 6d.)

THE MEDICAL RESEARCH COMMITTEE.

SECOND ANNUAL REPORT.

(Continued from p. 766.)

SIR CLIFFORD ALLBUTT, in the address published this week (p. 785), gives a stimulating account of the general purpose of the Medical Research Committee, and of the scope of the investigations carried out under its auspices. Last week (p. 765) some particulars were given of the work done in two of the departments organized by the Committee—the bacteriological and the statistical. We will here confine ourselves to brief indications of the nature of some of the other work done for the Committee.

DEPARTMENT OF BIOCHEMISTRY AND PHARMACOLOGY.

The director of this department, Dr. H. H. Dale, is responsible for one of the most practical results of the investigation of amoebic dysentery, which was an important part of the work of the department for the year. This was the establishment of the great clinical value of the double salt—emetine bismuthous iodide—in the treatment of chronic amoebic dysentery. Its efficacy was illustrated in the paper by Mr. Clifford Dobell published in this JOURNAL on November 4th, 1916.

Another outcome of the work of this department is contained in the reports of Colonel Leiper, R.A.M.C., who headed the bilharzia expedition to Egypt. The new knowledge gained of the stages in the life-history of this worm, parasitic in the blood of man, and its mode of transference in its alternate generation to the snail, and from the snail to man again, has allowed the necessary preventive measures to be taken for the protection of the troops stationed in Egypt, and given grounds for the hope that permanent control of the disease may finally be obtained, to the lasting benefit of the native population, of whom 80 to 90 per cent. in the Nile delta are known to be affected. One of the results of the continued work during the past year has been to implicate two additional species of snails in the spread of bilharziosis in Egypt. The evidence obtained in the previous year showing that man becomes infected by the passage of embryos through the skin during bathing or wading in infected water was based on experiments on mice, and experiments during the past year have been directed to the methods of rendering infected waters safe. Simple storage for forty-eight hours had been shown to be effective, but more rapid methods were worked out, and were put into routine use in all the camps and outposts in Egypt last spring. They consisted of the addition to water for drinking purposes of acid sodium sulphate, 1 in 1,000 parts, and to water for washing purposes of army cresol, 1 in 10,000 parts. It was found that the bilharzia forms escaped the Jewell system of water filtration, and could pass easily through the settling tanks and sand filtrations. This observation may be expected to lead to a fundamental revision of methods of water treatment in Egypt. Investigations made last winter reveal the fact that bilharziosis in Egypt includes two separate forms due to different species of bilharzia spread by different species of snails. Symptoms of haematuria are due to worms spread by three species

of the snail genus *Bulinus*. The symptoms of bilharzia dysentery, on the other hand, are due to worms conveyed through snails of the genus *Planorbis*.

THE DEPARTMENT OF APPLIED PHYSIOLOGY.

The work of this department, directed by Dr. Leonard Hill, assisted by Dr. B. Moore and Dr. Martin Flack, has been largely directed to safeguarding the health of munition workers, and their most important results have been recorded in our columns by the investigators or in our notices of the Memorandums issued by the Health of Munition Workers Committee at various dates within the last twelve months.

CEREBRO-SPINAL FEVER.

The work of the central cerebro-spinal fever laboratory is directed by Lieutenant-Colonel Mervyn Gordon, assisted by Major Hine, who both receive whole-time salaries from the Committee, and for the greater part of the year Dr. Flack was seconded with the rank of Captain R.A.M.C., for the study of cerebro-spinal fever in relation especially to the examination of cases of contact. Colonel Gordon directed measures for the control of the spring epidemic among the troops in the United Kingdom, and it proved less severe than in 1915. The laboratory has issued special culture media and standard diagnostic serum. In addition Colonel Gordon has done a good deal of research work. As has been already noted in papers by him in our columns, it is found that the meningococci in the cerebro-spinal fluid are not strictly uniform, and he has been able to describe four main types. Progress has also been made in the preventive treatment of carriers, and the latest step in it, published too late for notice in the report, was contained in Colonel Gordon's paper in the JOURNAL of November 18th, in which he described and figured atomizers for charging the atmosphere of a room with a disinfectant.

TYPHOID AND PARATYPHOID INFECTIONS.

The preparation and issue of standardized emulsions of killed typhoid and paratyphoid bacilli, and the corresponding standardized agglutinating serums, to naval and military hospitals has been continued in the Standards Laboratory of the Pathological Department of the University of Oxford. They are used for the recognition by the agglutination test of particular infections by the direct observation method without the use of a microscope. Precise quantitative results are obtained, and it has been shown that the diagnosis of these infections or their absence, in men recently or remotely inoculated with typhoid and paratyphoid A and B vaccines, as all soldiers now are, can be secured by quantitative tests of this kind repeated at intervals so that a characteristic curve of changing agglutinative values may be obtained in any laboratory. The work of standardization at Oxford is carried out by Dr. A. D. Gardner. In all, over 100,000 test portions of cultures have been sent out to over 250 different laboratories, and to about 270 individual bacteriologists. The actual expenses of material, packing, and postage have been borne by the War Office since July 1st, but the Committee continues to supply the cost of expert supervision and preparation.

Recently the Standards Laboratory has undertaken the preparation of standard cultures of bacilli of the chief dysentery infections—Shiga, Flexner, and Y, together with Gaertner. Professor Dreyer, who has general direction of the work, is serving with an honorary commission as Major, R.A.M.C., at Wimereux. Unfortunately a very large series of observations compiled by him were destroyed in a fire last January, but the observations have been so far as possible repeated.

Groups of observations made elsewhere by means of these cultures have been reported by Professor Glynn of Liverpool, Professor Walker Hall of Bristol, Dr. Donaldson of Reading, and Dr. O'Farrell of Dublin.

DISORDERS OF THE SOLDIER'S HEART.

Dr. Thomas Lewis, who was appointed a member of the Committee's permanent scientific staff in February, 1916, has been working on the staff of the Hampstead Military Hospital, reserved by the War Office for the reception and treatment of military cases of heart disorder, with a number of other officers, some of them belonging to the Canadian Army Medical Corps. The general plan of investigation and treatment followed was explained by Dr. Lewis and some of his colleagues in the memorandum published in the JOURNAL of September 23rd, 1916, and a special report on breathlessness in soldiers suffering from irritable heart was published in our columns on October 14th, 1916. Among subjects recently under investigation are the influence of tobacco on the circulation, and the relation of the thyroid gland to irritable heart. Notes of all cases admitted are compiled in very full detail, the after-history of patients leaving the hospital being followed up by correspondence as far as possible.

NEUROLOGICAL INQUIRIES.

An official conference of neurologists engaged in the French Army Medical Service, held in Paris in April last, was attended by Dr. Henry Head as the representative of the Medical Research Committee; he communicated to the conference the outlines of the scheme arranged by the Committee for the organized study of military neurological cases on the system described at p. 766 last week. The study and treatment of functional cases by Dr. Rivers and Major Rows at the Maghull Hospital, Liverpool, has been continued. The work of this hospital and the methods employed in it were described in a paper published in this JOURNAL on March 25th, 1916, by Major Rows. In addition to organizing this work, the Committee has been able to assist neurological work in military hospitals in London, Edinburgh, and Manchester.

BIOLOGICAL TESTING OF SALVARSAN.

The Committee has continued arrangements made at the outbreak of war for the physiological testing of the preparations of salvarsan and neo-salvarsan of French and British origin, placed on the market in this country. It recognizes that, for the ultimate test of the efficacy of the laboratory control, dependence must be placed on the reported results of the actual use of the preparations in practical therapeutics. Valuable detailed scientific records have been supplied by Surgeon-General Dudding, R.N., from Haslar Hospital, by Lieutenant-Colonel L. W. Harrison, D.S.O., from the Rochester Row Military Hospital, by Captain H. W. Lucey, R.A.M.C.(T.), from the Royal Herbert Hospital, Woolwich, and by Major Glen Liston, I.M.S., Director of the Bombay Bacteriological Laboratory. Unfortunately the appeal issued by the Committee to civil practitioners in June, 1915, and published in our columns at the time, has not produced a similar response. Nevertheless the reports received from the officers mentioned have led the Committee to conclude, with confidence, that after making all allowance for more scattered evidence of a partly adverse nature, the control carried out on its behalf has been serving its purpose in ensuring the supply to the medical profession, and to the Government departments concerned, of preparations of salvarsan little, if at all, inferior to those formerly obtained from Germany. The Committee has, by its advice to the manufacturers undertaking this work, endeavoured to render the supply of these products more stable and abundant, and to safeguard their freedom from undue toxicity. While the work might be reckoned outside the strict limits of medical research the Committee is satisfied that it has assisted not only in meeting an immediate national need, but also in founding an industry which will be of increasing importance to the practice of medicine. It hopes, also, that this undertaking, with several collateral inquiries, may greatly aid the future initiation of primary research work into the chemiotherapy of these and other diseases.

CONSTITUTION OF THE COMMITTEE.

Under the terms of the regulations three members of the Committee (Lord Moulton, Sir Clifford Allbutt, and Professor Matthew Hay) have retired. Their places have been taken by Viscount Goschen, Dr. George Murray of Manchester, and Dr. A. K. Chalmers of Glasgow. Major Waldorf Astor, M.P., has become chairman of the Committee, and Lord Goschen has accepted the office of treasurer. The report concludes by an expression of the Committee's indebtedness to the ability and power of initiative shown by its secretary, Dr. W. M. Fletcher, F.R.S. "His devotion of time and energy far beyond the normal demands of his secretarial work have alone made it possible for the Committee to deal with the emergencies which have constantly arisen, or to keep in touch with the growing and changing series of investigations which they have been called upon to supervise."

British Medical Journal.

SATURDAY, DECEMBER 9TH, 1916.

COMPULSORY LATIN.

JUDGING from the discussion on two days last week, there can be little doubt that the General Medical Council will eventually agree to the omission of Latin as a compulsory subject from the preliminary examination in general knowledge for medical students; but meanwhile the matter is in suspense. The Education Committee advised a compromise, founded purely on expediency—namely, to drop Latin for the senior or higher grade student and to retain it for the junior. This, at first sight, may seem a most illogical recommendation, but when the matter is looked into it is seen that the Council has had its hand forced by the universities. For over fourteen years the University of London has not called for Latin as an essential element in its matriculation examination, and within the last two years this example has been followed by the Universities of Liverpool, Leeds, Sheffield, and Birmingham. The Council, however, has continued to require that medical candidates should produce a certificate of having passed a satisfactory examination in Latin. It was implied in the report of the Committee, and distinctly put forward during the course of the discussion, that in this matter the Council was under an obligation to be guided by the universities, which are, in fact, the bodies responsible for ensuring that the student shall have received during his school career a mental training sufficient to enable him to engage in medical study, and to continue the development of his mind during that process. The position is further affected by the movement now developing throughout England, under the influence of the universities and the Education Department, towards the establishment of a system of school-leaving certificates; these certificates are now generally accepted by the universities as the equivalent of the matriculation examinations for the faculties of arts and science. The regulation requiring Latin put the medical student in an exceptional position, and was open to the objection that it placed the Council in conflict with the deliberate opinion of the universities.

This argument appears to us to have great weight, and to receive comparatively little reinforcement from the coincident opinion of the Board of Education. We believe that the future of learning in this country, including in that the development of science, is bound up with the freedom of the universities, which should be loyally supported by all bodies having any control over education. The recommendation of the Education Committee was practically that all examinations accepted for matriculation in the faculties of arts and science in any university of the United Kingdom should be approved by the Council as qualifying the successful candidate for admission to the *Students' Register*. This carried with it the recognition of degrees in arts and science of any university of the United Kingdom or of the British Dominions. This recommendation was finally accepted by the Council by 21 votes to 12, but only after a debate in which several members expressed a different opinion. The arguments against the dropping of Latin were, on the whole, those with which we are familiar. The strongest point was that Latin was the key to certain other languages—French, Italian, Spanish, and Portuguese, the last two, of Western languages, those spoken by a larger number of persons than any other language save English. The particular argument was also used that the terminology of medicine, and especially of anatomy, is permeated by Latin words or roots.

The other recommendation of the Education Committee was not logically founded upon the first; it proposed that Latin should remain compulsory for the junior or lower grade of candidates, who did not, as a rule, produce as evidence of general knowledge certificates of examination by a university. The argument which seems to have had most weight with the Education Committee was that whereas candidates who entered through a university examination were generally aged from 17 to 18, the age of the average pupil at the other or junior examinations was from 15 to 16. The Committee recommended the retention of Latin as a compulsory part of these junior examinations on the ground that at present there were no possible substitutes for that language in the educational scheme, suitable to a youth of 15, which could be said to be entirely satisfactory. This recommendation was resisted by several members of the Council, who had supported the first, and eventually this part of its report was referred back to the Education Committee.

The action and the hesitation of the Council coincide—and it is no more than a coincidence, for the subject has been before the Council for several years—with the vehement discussion in the press of the place which science should have in education. So far the head masters have not been convinced, and Sir Clifford Allbutt, to whose illuminating contributions to the subject we have already referred, has published another article in which he pours scorn on their assurance that they are willing to accept, and have indeed accepted, science as a "complementary" subject. Sir Clifford Allbutt maintains that the cry of what is to be taught to boys is of less importance than the vision of how things are to be taught. Perhaps Mr. Cobden Sanderson, an ally in a very unexpected quarter, put the matter best when he said that "the object of science is not its application to industrial uses, but the knowledge and vision of the universe," and denounced the "mistaken or ignorant view of science which confuses the issues of modern life and makes it lose the great opportunity—the transformation of book and laboratory science into the vision of the vision which, though always actually around us, is yet so difficult to see—the vision of the universe, inclusive of man."

Returning to the concrete point, we may quote Sir Clifford Allbutt's conclusion that "with careful leaving certificates all compulsory subjects should be discarded by the universities"; if this be true then surely the General Medical Council has done rightly in accepting the decision of the universities, for as the representative of Oxford said during the discussion, "The universities are the bodies best able to express opinions on matters of general education, and the Council must bow to their decision as that of those best qualified to express an opinion and exercise control on that particular subject."

CARE OF THE EYESIGHT OF MUNITION WORKERS.

ONE of the subjects which is calling for the attention of the managers of munition works is the preservation of the eyesight of the workers, and the Health of Munition Workers Committee has issued a useful memorandum, entitled "Effect of

Industrial Conditions upon Eyesight."[1] The memorandum deals both with accidents and with eye-strain.

The Committee finds that, speaking generally, there has been a considerable increase at the hospitals in the number of eye cases among munition workers, partly due to the increase in the number of such workers, and partly to their inexperience of metal and engineering works. At the Birmingham Eye Hospital 15,000 eye injuries are seen annually. The majority are slight, but it is estimated that 500 to 700 days' work are lost annually from these trivial accidents. At the Moorfields Eye Hospital not less than twenty men attend daily from engineering shops to have small foreign objects, usually metal or emery, removed from the eye. A large proportion of the cases, in round numbers 100 a week, now come from munition and armament factories. There, and at the Royal Eye Hospital, Manchester, it is estimated that these accidents cause absence from work on an average for three days, so that taking the Moorfields figures alone there would be a loss of three hundred days' work, or, say, forty men idle a week, from preventable accidents. One of the honorary secretaries of the Wolverhampton Eye Infirmary states that the chief causes of eye injury in engineering and other munition areas are due to impacted and other perforating bodies, lathe work and grinding being the most prolific in producing them, and a trades union association suggests that the greater number of slight eye injuries observed occur because the major portion of munition work, so far as machinery is concerned, is lathe turning, the turnings breaking or flying off. In discussing the importance of never neglecting an eye injury, however trivial, a statement of an ophthalmic surgeon in Glasgow is quoted to the effect that in most instances the actual physical damage is slight and the worker is able, if the injury to the eye be promptly and skilfully treated, to resume his duties in a few hours, or at the utmost in a day or two. If it be neglected, or unskilfully or carelessly treated, sepsis almost certainly occurs transforming a very trivial injury to the cornea into suppurative keratitis, which may run a prolonged course, lead to more or less impairment of sight, or even destruction of the eye.

The memorandum contains suggestions both for the prevention of accidents and for their proper treatment. It appears that there is great prejudice among workers against the use of eye-guards and goggles. Nevertheless, the Committee points out that in certain kinds of work the eyes should always be guarded from flying particles of metal, and diagrams are given of two forms of goggles. One of them very much resembles a form of goggles once popular with motorists and is not unlike those used by airmen. Possibly these circumstances may in time diminish prejudice against their use. It is pointed out that an eye-guard should fulfil certain conditions; it should be strong and cheap, should not impede vision, should be light and comfortable and allow free play of air so that moisture does not condense on the transparent medium, and that it should prevent particles reaching the eyes from in front, from either side, or below. The fact that particles are little likely to enter from above is important, since it allows the upper part of the goggle to be left open for ventilation. Not much importance is attached to the objection that glass broken by flying particles may be driven into the eye and cause worse injury than if it were not present. This appears to be a very exceptional accident, and an American shop bulletin is quoted as stating that "in no instance was an eye even slightly injured by flying glass where the lens was broken by a flying chip." The main objection to glass and any other transparent medium is stated to be that after a time it becomes pitted and obscured; eye-guards should therefore be so made that the glass can be easily removed and replaced. With regard to the treatment of accidents the advantage of having ambulance stations or surgeries in factories is mentioned, because in such cases no treatment need be attempted in the workshop. Failing the doctor, the nurse should render first aid and subsequently refer the patient to his own doctor. If the man has to be attended by one of his fellow workmen first aid should be mainly directed to relieving pain, and should be limited either to the use of eye drops applied from a suitable bottle, or to a pad and bandage. The Factory Department of the Home Office has issued an excellent handbill[2] on the treatment of minor injuries, which should be in every workshop, large and small. With reference to eye injuries, it insists upon the importance of going to a doctor at once. It suggests that antiseptic anodyne eye drops may be used, and mentions cocaine 0.5 per cent. and mercury perchloride 1 in 3,000 in castor oil.

With regard to eye-strain, it may be remembered that a Home Office Committee on the lighting of factories, over which Dr. R. T. Glazebrook, Director of the National Physical Laboratory, presided, issued its first report about a year ago. It recognized that good illumination was necessary for the safety of workers, for the efficiency of their work, and for their general health. As to the last point, information is not precise and further study is necessary, but on the question of output and efficiency the Committee had abundant evidence that where the lighting conditions had been improved there had been a gain both in respect of the quantity and the quality of the work. The improvement of lighting conditions depends not merely upon brightness, but upon the distribution of light. In some factories great advantage has been obtained by improving the general lighting, and in this connexion the colouring of walls and floors is important, for reflected light is a valuable means of improving the general lighting and preventing shadows. The provision of good lighting of factories and workshops has a bearing on both parts of the Memorandum of the Health of Munition Workers Committee, but especially upon eye-strain, which, broadly speaking, is due either to defects of vision or to the nature and conditions of the work. It may, however, be one manifestation of general fatigue, and is thus likely to become more marked when long hours are worked, when night shifts are necessary, or when workers are undernourished, anaemic, or of poor general physique. The liability to it is accentuated by errors of refraction, including those due to increasing age, if not properly corrected. Instances have been noted of headaches and eye-strain resulting from inadequate light, both artificial and natural, from artificial lights adequate in amount but so placed as to throw a glare on the eyes of the workers, and by the employment of workers to carry out fine work without first testing their eyesight.

The Committee recommends that when operatives are being engaged for fine work which calls for close attention the eyesight of each should be tested by the medical officer. If he be not available, the nurse or welfare supervisor should apply simple tests to each eye separately, and should be instructed to send those

[1] Memorandum No. 15. (Cd. 8409.) Price 1d.

[2] Form 923. August, 1915. To be obtained through any bookseller or local subagent for the sale of factory forms. (Price 1d., by post 1½ d.)

who do not reach the standard laid down to the medical officer, or an ophthalmic surgeon, or eye hospital. The standard suggested as the minimum is $\frac{6}{9}$ in both eyes (Snellen's types), though $\frac{6}{12}$ in one of the eyes may be sufficient in some cases; and the ability to read standard type 0.45 at 1 ft. distance. It is also recommended that any worker who complains of frequent headache, pains in the eyes, or shows signs of conjunctivitis, should be tested. The frequency with which conditions calling for treatment may occur is shown by the experience of one factory, where 8 per cent. of the workers had been obliged to obtain glasses since starting work; 12 per cent. found sight difficult at night; 7 per cent. complained of eye-strain, and 2 per cent. of eye-strain increasing in severity. Besides these, 10 per cent. appeared to have latent eye-strain.

MOBILIZATION OF THE PROFESSION.

WE have received a number of representations—some of the most urgent from Scotland—on the need for more effective means of equalizing the burden which the war has placed upon the profession, and of providing more adequately for the needs of the civil population, as well as of the military medical services. The remarks made by the President of the General Medical Council, to which we drew attention last week, have tended to cause many to give serious consideration to the matter. It will be remembered that after stating that he had been officially informed that the War Office would at once gladly engage 400 more medical practitioners if they were forthcoming, he went on to speak of the excellent work done by the central and local medical war committees in England and Scotland in assisting the profession and the Government to secure a proper allocation of the available medical men, having regard to the respective requirements of the military and of the civilian population. In this part of the address he appeared to have in mind mainly the withdrawal of medical men from civil practice to serve in the navy or army; but he went on to raise the question of what should be done in respect of those members of the profession who had failed to give their co-operation to the movement represented by the central and local medical war committees, and said that if the voluntary effort of the profession should on this account fail to meet all the requirements of the medical services we might have to face legislative compulsion. The chief enemy nation has decided to mobilize the whole nation for war. In this country events are clearly marching in the same direction, and the question which is exercising the minds of many members of the medical profession is whether it would not be wise and politic for the profession itself to consider the possibility—or, as some would say, the probability—of the need for the mobilization of the whole profession. We admit that the word "mobilization" is greatly in need of definition; but we take it to mean in principle that every medical man and woman should formally undertake to place his or her services at the disposal of the governing authorities of the country, to give such service, whether military or civilian, as may be indicated, and, if civilian, to render the service in any place in Great Britain. The need for the application of this principle of general mobilization of the whole profession may be nearer than many of us have supposed; there are, indeed, many who believe that the time is already ripe for action.

VALONA: A SANITARY VICTORY.

VALONA is a seaport on the Adriatic. It lies on a low, damp site, closed in by lofty hills and adjoining a lagoon extending a mile and a half inland from the bay. The situation, chosen for strategical reasons, is very unhealthy. When it is remembered that Albania was the most neglected province of Turkey in Europe and Valona the most neglected town in it, the hygienic conditions may easily be imagined. In the *Annali di Medicina navale e coloniale* there is an account of the work of a sanitary mission of the Italian Navy sent there two years ago. When it landed on October 30th, 1914, it found that the wretched condition of the town was aggravated by the presence of 6,000 or 8,000 Epirote refugees. There was no provision of potable water, and owing to the lack of latrines the streets were in an indescribably filthy state. Malaria, tuberculosis, scrofula, and syphilis were rampant. Small-pox was widespread. Typhoid was rare among the inhabitants, but a few cases occurred among non-vaccinated soldiers. On the other hand, an indeterminate infection corresponding in character to an attenuated typhus was frequently met with. The first care of the mission was to organize a proper sanitary service with dispensaries, domiciliary visits, and distribution of medicines. General vaccination after a time freed the place from small-pox. Little could be done in Turkish surroundings to combat venereal diseases, but prostitution was to some extent regulated. Diphtheria was treated by the local doctors as a simple angina or scarlatina, and the serum issued to them was not used; the mission, however, convinced them of their error. With regard to malaria, the Musulmans had accepted it as a dispensation of fate. Petrolization, besides its cost, was out of the question owing to the great area of the marshes; but some effect was obtained by treatment of the waterways. Quinine was placed at the disposal of any one who asked for it, and in the summer and autumn more than 10,000 injections were made with satisfactory results. There was a notable diminution in the pernicious forms. Among these was a meningitic type that resembled cerebro-spinal meningitis, but examination of the cerebro-spinal fluid and the effect of treatment showed the true nature of the disease. Among the troops 40 per cent. were affected with malaria, notwithstanding the prophylactic measures taken, which, however, were perhaps not carried out with sufficient strictness. Supervision of food, slaughter-houses, drainage, prisons, the cemetery, and the lazaretto was established, and a pure water supply provided. The Italian mission may fairly be congratulated on having done much for the purification of Valona. Its success is all the more noteworthy considering the difficulty of sanitary reform in a population which looked upon washing as superfluous and scavenging as absurd.

MOLTEN METAL IN THE EARS.

FROM time to time, if we may believe what we read, kings, criminals, and the heroines of romance or history have all had occasion to pour melted metal into the ears of superfluous personages. Poulet, for example, records the case of a wife who endeavoured to rid herself of her husband by pouring melted lead into his right ear while he was asleep. The results were very serious, but not fatal. The mass of lead was extracted eight months later; permanent facial paralysis and loss of taste on the right side remained behind. St. Stephen, King of Hungary, married Gisela, daughter of Duke Henry II of Bavaria in the year 996. It is said that this lady got rid of one Vasul, a pretender to the throne, by having molten lead poured into his ears—an action that could not well be attributed to a saint, however credible it may now seem when related of a Bavarian. Marcus Crassus, the wealthy Roman general and triumvir, was defeated and taken prisoner at the battle of Carrhae in the year 53 B.C. He was put to death by his captor, the Parthian general Surenas, who had molten gold poured into his ears, or, according to another account, down his throat, and finally cut off his head and sent it to the Parthian king. Courts and criminology apart, however, analogous events sometimes happen by accident in the industrial world. In foundries and metal works it has

not infrequently occurred that gouts or splashes of molten metal have, by some accident, made their way into the foundrymen's ears, producing severe burns of the pinna or meatus, and other serious consequences. Dr. R. Hahn has recently described[1] the case of a founder, aged 19, who received a drop of melted cast iron in his right ear; the metal fell from a height of about a metre on to the cement floor of the foundry, some two metres away from the patient, who fainted and fell to the ground. He came to an hour later with atrocious pain and complete deafness in the right ear, dizziness, and tinnitus. Three hours afterwards a copious discharge of clear, watery fluid from the right ear took place; the pain went away in three days, but the other troubles persisted; and the mastoid region became swollen, painful, and tender for a few days. The man came to hospital thirteen days after the accident. The right pinna and the cartilaginous portion of the external auditory meatus were found to be normal; the osseous portion was very much narrowed by inflammatory swelling of its anterior and inferior walls, and was further obscured by a free secretion that was watery rather than purulent. No view of the tympanum could be obtained, no foreign body could be seen, and there was no evidence that the labyrinth was involved. The meatus was treated by syringing with alkaline lotion; the swelling lessened, and after a week small metallic scales could be seen in the infratympanic recess, while a few more were removed by syringing. The tympanum became visible nearly four weeks after the accident. It showed a large perforation in front of the manubrium of the malleus, and below it a black foreign body firmly wedged in and immovable. The syringing of the meatus was continued, and metallic particles continued to come away. A week later under cocaine-adrenalin anaesthesia the foreign body was extracted, and proved to be a pellet of cast iron the size of the head of a sulphur match. The suppuration of the middle ear ceased a few days later, but the large perforation of the drum remained open; the patient could hear the whispering voice half a metre away, and the functions of the vestibular nerve were found unimpaired. Dr. Hahn argues that the hot metallic fragment probably burnt a hole in the anterior part of the tympanic membrane in this case, and he discusses the indications for and against immediate operation for the removal of such foreign bodies otherwise than by way of the external auditory meatus.

DIARRHOEA IN LOCUSTS.

From the earliest times plagues of locusts have devoured the crops and the trees in nearly all the warm but dry parts of the world. They have always been most troublesome in steppe or semi-desert country—for example, Egypt, the Barbary coast, Persia, the Argentine, and Mexico. Much money and effort have been expended in attempting to destroy these hosts; they have been burnt in dry scrub, they have been buried in long trenches dug across their line of advance, and the egg masses have been dug up and destroyed; but no one of these measures is in itself sufficient, though occasionally, with infinite labour and the employment of many methods of destruction, the plague has been stayed. Dr. d'Herelle's discovery of the cocco-bacillus of a specific and highly fatal enteritis has put a new weapon into the hands of those who have to combat *Schistocerca peregrina* in Morocco and Algeria. Musso and also Velu and Bouin[2] describe the bands of small locusts which issue from the spots where the eggs were deposited; how each band preserves its identity and advances in a definite direction on a front which may be as much as 50 kilometres in width. After marching for nearly two months and devouring every green thing, the locusts complete their metamorphosis and become fully-winged adults. It is during the earlier part of their life that locusts are most susceptible to infection; perhaps because the virulence of the cocco-bacillus decreases towards the end of the epizootic. Direct infection can be produced by sprinkling the desert herbage with a broth culture, but this has been found to be impracticable owing to the large area to be treated. The method employed in Algeria and Morocco is to increase the virulence of the micro-organism by successive passages and then to sow broth cultures over a small enclosure containing about 10,000 locusts. These are then liberated at the head of the advancing columns; as these infected specimens are beginning to show signs of weakness they are speedily devoured by the rest, and in this manner a very fatal outbreak of diarrhoea is started. The healthy locusts, of whatever stage, will always indulge in this habit of "acridiophagy," and at the height of an epizootic they may die eight hours after infection; they will also lick up the fluid that dribbles from the mouth or anus of an infected individual. The symptoms of the disease are progressive weakness and diarrhoea; those attacked tend to drop behind the rest, which unfortunately renders it more likely that they will be eaten by birds, and so not infect the rest of the band. Methods of control such as this always demand an exceedingly minute knowledge of the bionomics of the pest, as well as a knowledge of its diseases. If only an infectious disease of the louse, or the house-fly, or the gipsy moth could be discovered, we might at once hope to apply our not inconsiderable knowledge of their habits. It would appear that a great field for bacteriological research here lies open.

[1] *Giorn. d. R. Accad. di Med. di Torino*, Turin, 1916, lxxix, 338.
[2] Musso. *Ann. Inst. Past.*, No. 7, Tome xxx, July, 1916. Velu and Bouin, ibid., No. 8, August.

BRITISH PRISONERS AT RUHLEBEN.

Till lately the conditions of the internment camp at Ruhleben were a disgrace to the German Government. Of this there is the fullest proof in official reports by Dr. A. E. Taylor, of the American Embassy in Berlin, on the inadequacy of the food supply, and by the Ambassador himself, Mr. Gerard, on the scandalous deficiencies in the housing accommodation. These reports were published as White Papers, and their gist was given in the Journal at the time. The testimony of returned prisoners was to the same effect. We need only quote that of Sir Timothy Eden, of Windlestone Hall, Ferryhill, Durham, who came home from Ruhleben in July. He described the conditions as "altogether most intolerable"; prisoners were herded together in ill-lighted barracks; they had to sleep on straw, and the food was insufficient in quantity and bad in quality. More recent evidence goes to show that the Germans are now treating the prisoners at Ruhleben with less cruelty; whether this is the result of a newborn sense of humanity or of shame or fear we will not take it upon ourselves to say, but the fact is satisfactory. The camp was visited quite lately by Dr. Herbert Bury, Anglican Bishop for North and Central Europe. With the consent of our own Government and the permission of the German authorities he spent a week at Ruhleben, living among the prisoners, having his meals with them in their lofts and horse-boxes, and having the freest intercourse with them without the presence of an interpreter or any German official. He says that although the men naturally suffered from the monotony of life within enclosures of barbed wire and the want of privacy, it is wonderful how they manage to keep up their spirits, and he felt very proud of them. The prisoners administer their own affairs, and they practically live on the parcels they receive regularly from home. Without them they would starve or freeze to death. They cannot eat the rations supplied by the Germans. They have started a chicken-run on the racecourse, so that many of them are able to supplement their food supply from time to time with eggs and poultry. Everything that goes to the life of the camp in the way of materials has been sent out from this country or provided by the British Government. The men beguile the time with

concerts and dramatic entertainments, for which they make all the preparations themselves. The bishop said that it brought tears to his eyes to listen to the recital of what they had gone through in the early months of their internment. Happily now, thanks to the stream of parcels coming from home, the never-failing sympathy of the British Government, and the non-interference of the German authorities, life at Ruhleben is not only tolerable but character building as an experience. The impression that remained with him was that the prisoners are a body of intellectual, well-set-up men, fairly representative of the best classes among us. As to the authorities, he was not only assured of their sympathy, but charged by them to do everything in his power to hearten the inmates of the camp. The "University of Ruhleben," as he called the improvised seat of learning there, reflects the greatest credit on their spirit and enterprise. Among the branches of knowledge studied are commerce, navigation, engineering, languages, and art. Bishop Bury's testimony is satisfactory as far as it goes. But we confess we should like some more definite information that the housing conditions which Mr. Gerard denounced so strongly in June have been fully remedied, and that men are no longer herded six together in a horse-box, and that provision is made for better lighting, the want of which threatened the eyesight of the prisoners and caused depression and mental trouble. Dr. Bury's assurance that all letters from the camp may be relied upon as accurate is not altogether in accordance with the statement made in the *Times* of July 8th, 1916, that prisoners returned about that time were very unwilling to discuss the situation at Ruhleben as they feared that anything published might do harm to those left behind. Without wishing to insinuate that the bishop may have been too ready to accept expressions of goodwill on the part of the authorities, and the statements of the men naturally wishing to stand well with their gaolers, we cannot help remembering that the German official is a past master in stage management and that he has succeeded in hoodwinking more than one distinguished visitor to his prison camps. There appears to be no doubt, however, that at some of the camps, and notably at Ruhleben, gentler methods and more kindly officials have made the lot of the prisoners less wretched than it was. For this we are in large measure indebted to the good offices of the American Embassy at Berlin.

EPSOM COLLEGE.

EPSOM was a well-known spa in the seventeenth century, and to lovers of literature its name recalls sweet Dorothy Osborne, who became the wife of Swift's patron, Sir William Temple, and other persons of fashion who took the waters there. Its renown as a shrine of healing afterwards became overshadowed by its fame as a place where "Olympic dust" is raised by the swift feet of running horses, and to the general public of the present day it connotes those great racing festivals, the Derby and the Oaks. To the medical profession Epsom has different associations, almost sacred in character, as the home of a foundation created by its own efforts, which by the excellence of its work has won for itself a reputation of which we have every reason to be proud. Epsom as a medical institution fulfils a twofold function. It gives a solid groundwork of general knowledge to the sons of medical men. Although it is in the fullest sense a public school of the highest class, it is to a considerable extent a nursery for the medical profession. How well Epsom College discharges its educational function is proved by the distinctions gained by its pupils. That the school also fosters the spirit of patriotism in its boys is shown by the readiness with which they have come to the help of their country in her hour of trial. At the annual meeting of governors held on June 30th it was announced that 520 Old Epsomians were then serving, of whom 420 had joined since the beginning of the war. Since then the number has doubtless increased. It is safe to say that, in proportion to its numbers, Epsom is not behind any of our great schools in the generosity of its response to the call of King and country, and its lengthening roll of honour is a speaking testimony to the quality of the young men it has sent forth. It would be a public misfortune if a school which is doing such good work for the nation should have its teaching efficiency curtailed by any falling away in the subscriptions out of which its fifty foundation scholarships are provided. Besides training the young, Epsom ministers to the needs of the old by giving pensions to practitioners or their widows left stranded in their day of disablement on the desolate shore of poverty. For these purposes an annual sum of not less than £4,500 has to be raised, and the numberless demands on the purses of the charitable, together with the general shrinkage of resources and the increase in the cost of living caused by the war, make this a matter of great and ever-increasing difficulty. Probably at no time in the history of the Royal Medical Foundation of Epsom has the need of assistance been more urgent. The Council is confronted with a problem which is causing it the deepest anxiety. Its sources of revenue have been seriously diminished by the withdrawal of a very large number of subscriptions, and unless support from new quarters is forthcoming it will become necessary to make great reductions in the charitable work of the foundation. It would be most regrettable if the Council had to take a course which would cause suffering to many deserving and helpless persons at a time when there is so much misery and want among us, and we feel that the appeal from Sir Henry Morris, the treasurer, which is printed at p. 821, will not be made in vain. The profession has always shown itself generous in its support of the Epsom Foundation, and we are confident that if those who have the ear of wealthy friends and patients will use their influence to get subscriptions, all fear of the crippling of the work of a most deserving institution will be removed. The public owes a debt to those who do so much for its relief in times of suffering and danger far beyond the meagre emolument which the doctor can generally command. There is no way in which it can better repay that debt than by helping members of the profession or their widows in distress.

TRAVELLING DISPENSARIES IN INDIA.

IN his powerful refutation of the insidious calumnies circulated by Germany regarding British rule and administration of India,[1] Sir Mancherjee M. Bhownaggree, K.C.I.E., makes prominent mention of the benefits conferred on Indian peoples by the extensive arrangements for medical relief and the prevention and mitigation of "plague, pestilence and famine" instituted by Indian governments. No better illustration could be furnished of the force and truth of this statement than the "Report on plague administration and the working of travelling dispensaries in the United Provinces for the year July 1st, 1915, to June 30th, 1916," drawn up by Colonel C. Mactaggart, M.A., M.B., C.I.E., I.M.S., Inspector-General of Civil Hospitals, United Provinces. Plague seems to have taken a permanent hold of these provinces. During thirteen years the total of deaths ranged from a minimum of 13,814 to a maximum of 354,285, the number for the year under report being 35,929. As usual, the prevalence of the disease was comparatively moderate from May to November, and severe from December to April, the month of July presenting a minimum of 25. The several districts of the province suffered unequally, only 9 out of 48 remaining free. To combat this serious visitation various measures were resorted to under the direction and control of Rai Bahadur Kanouji Lal, B.A., L.R.C.S., chief plague

[1] *The Verdict of India.* By Sir Mancherjee M. Bhownaggree, K.C.I.E. London: Hodder and Stoughton. (2s.)

officer. These consisted in the evacuation of infected premises, the systematic destruction of rats, preventive inoculations, the appointment of five special health officers during the plague season, and the organization of 40 provincial and 47 district travelling dispensaries working under assistant surgeons, supervised by the special staff. These travelling dispensaries, supported partly by provincial and partly by local funds, were dispatched to localities where disease was most prevalent. They were made available for the treatment not only of plague but of other infections and general diseases. The total number of patients treated amounted to 966,707, and 1,829 "major" operations were performed. "Pamphlets on plague, malaria, cholera, small-pox and tuberculosis were distributed"; 44,983 inoculations were performed, and it is stated that "this measure is reported from all districts to be popular among the people," especially on the appearance of plague in their villages. The treatment of plague by tincture of iodine is stated to have been practised with good results. Drop doses of the tincture are administered every second hour in half an ounce of chloroform water. Local applications of the tincture are also made to the bubos. S. Rama Iyer,[2] C.M.S., civil surgeon of Loi Mwa, Burma, has, following Connor, injected from 5 to 10 minims of the tincture intravenously once a day with good results.

SOBRIETY BY CARD.

A BRIEF description of the system of control of the liquor traffic elaborated by Dr. Bratt of Sweden and associated with his name was published in these columns a few years ago. The system had not stood the test of experience, and in Sweden doubts were freely expressed of its superiority over the Gothenburg and "Samlag" systems. In February, 1914, Bratt's system was introduced in Stockholm, and the results for 1914 and 1915 are now available for comparison with the preceding years. Briefly, under Bratt's system each person is allowed only a limited quantity of alcohol, which is checked off on his card. In 1913, under the "Samlag" system, the number of litres of alcoholic beverages sold per head was 15.96. In 1915 the amount was reduced to 8.86 litres. The fall in the sale of spirits was still greater, the figures for spirits (50 per cent.) for the three years 1913, 1914, 1915 being 12.04, 6.76, and 5.77 litres a head. The total sale of spirits in Stockholm, including the sale by restaurants and wine merchants, was reduced from 24.4 litres a head in 1913 to 17.8 in 1914 and to 16.3 in 1915. An appreciable reduction in the incidence of drunkenness has also been noted since 1913, when the cases of drunkenness in Stockholm numbered 17,696. The number fell to 11,878 in 1914 and to 11,323 in 1915—a reduction of 36 per cent. since 1913. In that part of Stockholm where most of the restaurants are situated the reduction was only 13 per cent., and as the card system does not apply to restaurants and cafés, but only to wine shops, the card system must be credited with the very great reduction of drunkenness in the other parts of the town. In one police district "police offences" were reduced by 54 per cent. between 1913 and 1915. The number of cases of delirium tremens known to the authorities fell from 623 in 1913 to 459 in 1914, and to 362 in 1915, a fall of 42 per cent. in two years. A report by the medical officers of health on the incidence of chronic alcoholism tells the same tale. In 1913 there were 492 cases, in 1914 318 cases, and in 1915 only 173 cases, although the total number of cases of illness notified had risen from 20,516 in 1913 to 22,269 in 1915. Little wonder, therefore, that Stockholm has decided to continue this system in spite of the violent attacks made on it from various quarters. Even the comic papers have taken a share, and *Strix* has regaled its readers with the tale of a wake at which the joyous cup was filled by drinks debited to the departed, whose card was filled for many months in advance.

[2] *Indian Medical Gazette*, October, 1916, p. 371.

AMENDED COCAINE REGULATIONS.

BY an amending Order dated December 5th some amendments have been made in the Defence of the Realm Regulation 40 B relating to cocaine and opium, of which the following are the most important: (1) Power is given to the Secretary of State to issue licences for the manufacture of cocaine in this country. Any person manufacturing or carrying on any process in the manufacture of cocaine without a licence or otherwise in accordance with the conditions of the licence will be liable to a penalty. (2) A medical practitioner who gives a prescription for the supply of cocaine otherwise than in accordance with the conditions laid down in the regulation is made liable to a penalty. (3) Every article containing cocaine must be marked with the amount and percentage of cocaine contained in it. (4) Power is given to the Secretary of State to direct that any person authorized under the regulation to purchase cocaine or opium who is convicted of an offence against the regulation or against the proclamations regulating the import or export of cocaine or opium shall cease to be an "authorized person." (5) The authorization in the case of registered chemists and druggists is limited to persons, firms, or bodies corporate who carry on the retail business of a chemist and druggist. Paragraph 1 (*b*) of the original regulations remains unaltered. It requires the prescription given by a medical practitioner to "specify the total amount of cocaine to be supplied on the prescription except that, where the medicine to be supplied on the prescription is a proprietary medicine, it shall be sufficient to state the amount of the medicine to be supplied."

Medical Notes in Parliament.

The Ministry of Pensions Bill.

THIS bill, originally introduced with the title "Board of Pensions Bill," was read a third time as amended in the House of Commons on December 4th. In a general reply on the discussion in Committee, Mr. Hayes Fisher, speaking with regard to the treatment of disabled soldiers, said that the Army Council had under its control nearly all the best doctors and best nurses, and generally the best means of treating the soldier. It was necessary, therefore, to look to the military hospitals for curing the disabled man before the Statutory Committee took him into its care and did something for him in the matter of training and employment. One of the first things for the Pensions Minister to do would be to see how far the Army Council should adopt the policy of keeping the soldier until he was reasonably cured and restored to a proper condition. It might be true, he admitted, that at the present time some disabled men were unwilling to be taught new trades because they could earn very good wages without undertaking any new training, but after the war there would be a glut of labour, and the untrained disabled soldier would be faced with difficulties. For this reason the Statutory Committee had made arrangements to give a substantial weekly allowance to any man who consented to undertake training. His family could be maintained during the time.

Material for the Manufacture of Intoxicating Liquor.

In a written reply to Mr. White, the Parliamentary Secretary to the Board of Trade has stated (November 29th) that the most recent particulars respecting the quantities of materials used in brewing and distilling related to the twelve months ending September 30th, 1916, in which year grain and sugar were used for the purposes to the following extent:

	Tons.
Barley	1,224,200
Other corn and grain	305,176
Rice, rice grits, flaked rice, maize grits, flaked maize, and other similar preparations ...	67,578
Sugar	119,999
Molasses	41,115
	1,758,068

A substantial proportion of the grain was home grown, but it could be argued that if it were not used for these purposes the necessity for importing grain for other purposes would *pro tanto* be reduced, so that the whole weight of grain and sugar used in brewing and distilling might be regarded as a drain on the tonnage space available for the importation of foodstuffs. Upon this assumption it might be estimated that this particular use of materials called, in the period stated, for the employment of tonnage sufficient to carry about 2,400,000 measurement tons of 40 cubic feet, or approximately 1,000,000 tons net register of shipping. The restrictions on brewing and distilling at present in operation were not, however, in force during the first part of the period to which the figures related, and it was estimated that the shipping required to carry the articles used in a year would, in consequence of the restrictions, be reduced to about 800,000 net register tons. In reply to Sir Robert Balfour, the Chancellor of the Exchequer has printed the following table of the quantities of materials used in the manufacture of beer and in distilleries in the United Kingdom in the years ending September 30th, 1913, 1914, 1915, and 1916:

Beer.

Year ended Sept. 30.	Malt.	Unmalted Corn.	Rice, Rice Grits, Flaked Rice, Maize Grits, Flaked Maize, and other similar preparations.	Sugar, including its equivalent of Syrups, Glucose, and Saccharum.
	Bushels.	Bushels.	Cwts.	Cwts.
1913 ...	52,287,637	91,068	1,611,357	3,279,814
1914 ...	52,525,634	92,385	1,566,506	3,279,710
1915 ...	44,354,066	80,242	1,276,406	2,678,522
1916 ...	41,605,365	77,776	1,343,930	2,359,936

Distilleries.

Year ended Sept. 30.	Malt.	Unmalted Grain.	Rice.	Sugar.	Molasses.
	Quarters.	Quarters.	Cwts.	Cwts.	Cwts.
1913 ...	1,053,608	1,198,739	3,780	—	1,204,223
1914 ...	1,116,003	1,213,342	36,660	—	1,315,070
1915 ...	968,480	1,212,130	13 261	1,300	975,360
1916 ...	1,103,953	1,414,435	7,640	31	822,301

Mr. McKenna said that no information was available as to the quantity of barley, except in the form of malt, used in the manufacture of beer and spirits; neither could the quantity of materials used in making potable spirits only be given. In written replies on November 30th the Parliamentary Secretary to the Board of Agriculture said that the production of wheat in the United Kingdom in 1914 and 1915 was 7,804,041 and 9,239,355 quarters. The figures for Scotland and Ireland in 1916 were not available, but for England and Wales the quantity was 6,942,559 quarters. For comparison he added the figures of wheat production in England and Wales in 1914 and 1915, which were 7,307,036 quarters and 8,464,741 quarters respectively. The total acreage under barley in Great Britain in 1916 was 1,502,026, and under hops 31,352. It was not possible to make even a rough estimate of the acreage of barley grown for malting because, although the total amount of barley thus used in a given year might be approximately stated, it was made up partly of imported grain, and the proportion of this used for brewing could not be stated.

War.

Medical Students.—Mr. S. Samuel drew attention by a question to the case of a patient at Dunfermline Hospital, who had died whilst under an anaesthetic administered by an under-nurse, owing to the scarcity of medical men, and asked whether, in view of this shortage, medical students would be placed in a certified occupation so long as they continued their studies, and what steps the Local Government Board was taking to protect the public health and to meet the deficiency of doctors in the next few years. Mr. Long said that the Local Government Board had been in frequent consultation with the naval and military authorities with a view to securing that the needs of the civil population should be met as far as practicable, having regard to the needs of the forces. The present arrangements made by the Army Council were as follows:

Fourth and fifth year students are not being called up for ordinary military service. First, second, and third year students are being called up if fit for general service. If not fit for general service, they are being allowed to continue their studies. All students allowed to continue their studies are, as a condition, required to join an Officers' Training Corps and attend a minimum number of parades. In practice, few first year students are called up, as they are mostly under 19, and come under a general rule postponing until that age the call of students, medical and other, belonging to an Officers' Training Corps. The men called up mostly obtain commissions. First, second, and third year men previously called but not fit for general service were, under an Army Council instruction issued in August, relegated to the Army Reserve to return to their studies subject to the condition above referred to.

Medical Examinations.—Mr. Forster informed Mr. Snowden that for a time certain persons, in the desire to avoid service, were going before several medical boards, sometimes after taking drugs. It therefore became the practice among military representatives to accept the opinion of the first medical board as most reliable. The practice of going before several medical boards had been stopped, and the question was not likely to arise in the future. In reply to Mr. MacCallum Scott, he stated that a man with rupture who was fitted with a truss might be passed for garrison duty abroad or at home.

Eyesight of Drivers.—In reply to a question in the House of Commons, on November 29th, Mr. Forster said that the statement which had been made, that in 1915, 867 people in London alone met their deaths as a direct result of the darkness of the streets, was shown to be very much exaggerated by the fact that the actual number of fatal accidents which occurred in 1915 during the dark hours was only 358. From this number should be deducted those which normally occurred during the dark hours in ordinary times, and a further deduction should be made on account of the employment of less skilled drivers in the place of those who have gone to the army. The Home Secretary stated on the following day that public carriage drivers in the metropolitan area were required before they were licensed to produce a medical certificate of fitness, in which eyesight was considered. After the age of 50 years a certificate of fitness was required either every five years or as often as the licensing authorities might deem necessary.

Dog Maintenance.—In reply to questions by Sir Philip Magnus and Mr. King for the maintenance of dogs other than those employed in rural districts, and the unhygienic condition of the pavements of the streets, the Parliamentary Secretary to the Board of Agriculture said that no official estimate had been made of the number of dogs in the country. It was certainly desirable to reduce their numbers in urban districts, where many of them served no useful purpose, and the question could be considered before the new licences were issued next January.

Allowances to Dependants.—In a written reply to Mr. Barnes, on November 30th, the Chancellor of the Exchequer said that with certain agreed modifications he had accepted the proposals of the Statutory Committee for dependants of apprentices or students who may have gone out to the war, for the payments to the families of disabled men in training for resumption of work, and for the increased provision of separation allowances in consequence of the increased cost of living.

DR. JACOB has analysed (*Muench. med. Woch.*, April 25th, 1916) two series of cases of typhoid fever among German soldiers in the first and second year of the war respectively. Of 100 cases under treatment from November, 1914, to the summer of 1915, the majority were severe or fairly severe; only about a quarter were relatively benign. Relapses occurred in 15 cases, and in almost a fifth of the total there were complications, many very severe. Most of these patients had either not been inoculated or inoculation had been performed during the incubation or after the onset of the disease. In the second series, from October 1st, 1915, to the beginning of February, 1916, there were 200 cases. In only about one-quarter of these was the course of the disease severe or fairly severe; the remainder were slight cases. The proportion of relapses in the second series was lower (6.5 per cent.). Taken as a whole, the clinical picture of the second series was quite different from that of the first series; the type was that of the so-called abortive typhoid fever. Dr. Jacob rejects the hypothesis that this improvement was due to a decline in the virulence of the infecting strains of typhoid bacilli, on the ground that while the severity of typhoid fever has gradually abated in the German army in the course of the war, a recent outbreak among uninoculated civilians was as malignant as the outbreaks among soldiers early in the war. In this outbreak among civilians there were over 1,000 cases, and the mortality was over 16 per cent. The conclusion is that prophylactic inoculation alone is responsible for the reduction of the severity, complications, and mortality of typhoid fever.

THE WAR.

PROBLEMS OF THE DISABLED SOLDIER AND SAILOR.

THE country desires that the man who has been discharged disabled in the war should be treated justly, and even generously. It is anxious that he should receive the pecuniary assistance he and his dependants need; that he should receive the best possible medical and surgical treatment; and that he should be helped to become a working member of the community, whether his work be manual, or of a clerical or intellectual kind.

Already we have two problems—the problem of the man still in the army, but so disabled that he will probably have to be discharged; and the problem of the man already discharged. Mr. Hayes Fisher stated, on November 21st, that there were now over 70,000 disabled men, and from the context it would appear that he was referring to the number of disabled men already discharged.

Arrangements for the future must provide for continuous treatment, so that when a man is discharged from the army it shall not be left wholly to his unaided judgement to decide whether he shall continue medical or surgical treatment and re-education for some occupation.

The two problems—the problem of the man still in the army, who is so disabled that he may have to be discharged, and the problem of the man already discharged—though interdependent, may be considered separately.

THE DISCHARGEABLE MAN.

The logical mode of approaching the question is no doubt first of all to consider the question of the dischargeable disabled, but not yet discharged, soldier and sailor. Upon this subject a joint committee of the Royal Colleges of Physicians of London and Surgeons of England has recently issued a memorandum drawn up at the end of October. It embodies principles which have frequently been stated in our columns, and are now generally accepted. They are set out in the report in the following terms:

1. That a considerable proportion of disabled soldiers require continued institutional treatment.

2. That an essential condition of success in any scheme for institutional treatment is that the patient be throughout under discipline; and that no form of discipline can adequately replace military discipline.

3. That consequently a disabled soldier should not be discharged from the army until a specially constituted board of medical experts have decided that no further institutional treatment will improve his condition, provided that such treatment do not extend beyond some general maximum limit of time to be determined by the military authorities.

The report proceeds to discuss the application of these principles, and arrives at the following conclusions under two general heads—first, the provision of institutional treatment for those men who can only be treated satisfactorily in this way; and secondly, the provision of temporary supervision for those who can be treated at their own homes.

1. That dischargeable disabled soldiers should be kept in the army until a board of medical experts determine that they have gained all the good that can be expected from institutional treatment, subject to a maximum period to be determined by the military authorities.

2. That they should be retained in military hospitals until they are fit to be discharged to convalescent camps or other suitable institutions, or to return to their own homes.

3. That on their discharge from military hospitals, such of them as are likely to benefit by institutional treatment should be transferred to annexes to the existing convalescent camps, or to such other camps as may be set up, officered by members of the R.A.M.C. to whom civilian help should be supplied.

4. That the duration of their stay in the various institutions should be governed by the opinion of boards of medical experts, subject to the maximum limit.

5. That in the camps the treatment should be, as far as possible, the same as that of soldiers who are expected to return to active duty, except that curative manual treatment, including technical and mechanical training, should, in many cases, take the place of military exercises.

6. That as their treatment will be nearly complete when they leave the camps and other institutions, it will be unnecessary to make one scheme for the whole country for their attendance when they return to their homes. Schemes for obtaining specialist advice for these patients and for those who have not received institutional treatment should be worked out by the local committees, in doing which the advice of local doctors should always be obtained.

7. Several kinds of special board will be necessary:

(i) For general cases: the board should consist of one physician, one surgeon, and a third officer.
(ii) For ophthalmic cases: one physician, one ophthalmic surgeon, and a third officer.
(iii) For neurasthenic cases and epileptic cases: one physician, one neurologist, and a third officer.
(iv) For mental cases: one physician, one alienist, and a third officer.

The Committee cannot contemplate that the military authorities will refuse to undertake the task of the continued treatment of the disabled soldier; but if they do, the Committee see no alternative except to set up a number of camps similar to military convalescent camps, and to add to them as occasion may require. But the objections to such a course are:

(*a*) The impossibility of obtaining efficient staffs of doctors and masseuses for a series of centres thus separately organized.
(*b*) The great probability of failure owing to the fact that the discharged soldier, being a voluntary patient, will not submit to such imperfect form of discipline as may be imposed, and will in most cases not stay long enough to secure the full benefit from the treatment.
(*c*) The great waste involved in setting up such separate establishments when, within a short time after the end of the war, there will be more than enough accommodation for the cases under consideration and an almost unlimited supply of skilled doctors and of masseuses to undertake their treatment.

THE DISCHARGED DISABLED MAN.

The problem of what should be done for the disabled soldier already discharged, or who may in future be discharged, before all has been done for him that surgical, medical, and manual curative treatment can do raises considerable administrative difficulties which are now being studied by the Central Medical War Committee, the joint committee of the two colleges, and several Government departments. It is probable that some scheme may be decided upon shortly. For the present it would be premature to publish any of those which have been drawn up.

SALONICA DISPATCH.

A SUPPLEMENT to the *London Gazette* issued on December 6th contained a dispatch from Lieutenant-General G. F. Milne, C.B., commanding British Salonica Army, on the operations since he assumed command on May 9th.

It deals with the period from May 9th, when General Milne assumed command, to October 8th. At the beginning of the period the greater part of the army was concentrated within the fortified lines of Salonica, but a mixed force, consisting of a mounted brigade and a division, had been pushed forward to the north of Kukush, about twenty-five miles north of Salonica. By arrangement with General Sarrail, the British forces during the following month took over that portion of the allied front which covered Salonica from the east and north-east, on the right bank of the river Struma and its tributary the Butkova, to the sea at Chai Aghizi. In the second half of July a further portion of the line to the west was taken over to a point south and west of Lake Doiran. The offensive began on August 10th, and the success achieved made it possible to shorten the allied line, and the British troops at the end of August had extended to the river Vardar. After the advance of the Bulgarians, which was unopposed by the Greeks, the task of maintaining the greater portion of the right and centre of the allied line was entrusted to the British army. On September 10th the Struma was crossed, and to assist the progress of our allies towards Monastir, the British army maintained a continuous offensive so as to ensure that no transference of Bulgarian troops from the Struma to the west took place. At the date of the dispatch the British line had been advanced to a depth of from four to ten miles east of the Struma.

The dispatch contained the following paragraphs relating to the medical services:

MEDICAL SERVICES AND MALARIA.

"I desire specially to acknowledge the excellent work rendered by Surgeon-General H. R. Whitehead, C.B., and all ranks of the medical services under his command during a period in which sickness was prevalent. All branches of the Royal Army Medical Corps and the Canadian Army Medical Corps deserve the greatest commendation and have fully maintained their high traditions of efficiency.

"The medical services have been called upon to face problems of great difficulty. It can be easily realized that in a climate varying from severe cold to intense damp heat, and in a mountainous country deficient in water, poorly supplied with roads, without local resources, and where dysentery and malaria are rife, the duties and responsibilities of these services must necessarily be heavy. Experiments as to the most efficacious types of mountain ambulance transport had been conducted in the winter and spring, and, as a result, travois, mule litters, and cacolets now form integral portions of each field ambulance.

"During the same period exhaustive measures were taken for an antimalarial campaign. Officers with special knowledge were appointed to supervise antimalarial work; swampy areas were drained, and the defensive lines then held carefully surveyed, with a view to only the most healthy portions being held. Although malaria has still been the prevailing disease, yet I feel certain that these careful precautionary measures have been greatly instrumental in lessening its intensity. The move to the valley of the Struma in June tested all the preparations made, and severely tried the medical resources. The area occupied was found to be highly malarious, the heat intense and damp, and the single road from the base long, hilly, and of uneven surface. The organization of this line of evacuation and the arrangement of halting places and refilling points was, however, successfully undertaken.

"The work performed by the motor ambulance convoys was invaluable. From the eastern extremity of the British line of defence evacuation by sea is the only feasible course. Three distinct systems are therefore in operation at one and the same time—by railway, by road, and by sea, all converging on one base.

"When active operations commenced, the *rôles* of the various forms of mountain ambulance transport organized for the field ambulances became apparent. On open hillsides, along the beds of ravines, over slopes covered with scrub, relay parties of stretcher-bearers, travois, litters, and cacolets, conveyed the wounded back to the dressing stations.

"The advice of the consultant physicians and surgeons, and of the medical experts who have visited this army, has considerably aided in the maintenance of a high standard of technical efficiency. I cannot conclude my remarks on the medical services without paying testimony to the devoted service rendered by the nursing sisters belonging to the various hospitals.

"I further wish to thank the British Red Cross Society and Order of St. John for its help and assistance. The Commissioner, Mr. H. L. Fitzpatrick, has been indefatigable in his endeavours for the welfare and comfort of the sick and wounded in both the base hospitals and field units."

Appended to the dispatch is a list of officers whose services are considered deserving of special mention. The following are the medical officers mentioned:

Staff.

Surgeon-General H. R. Whitehead, C.B., F.R.C.S.

A.M.S.

Colonels A. A. Sutton, D.S.O., M. P. C. Holt, C.B., D.S.O., G. T. Rawnsley, C.M.G.

Temporary Colonels J. Purves Stewart, C.B., T. Crisp English, M.B., F.R.C.S.

R.A.M.C.

Brevet Colonel (temporary Colonel) F. Smith, C.M.G., D.S.O.

Lieutenant-Colonels (temporary Colonels) P. MacKessack, W. H. S. Nickerson, V.C., C.M.G.

Lieutenant-Colonels A. R. Aldridge, C.S.I. (Reserve of Officers), J. C. Connor, S. H. Withers, L. F. Smith, E. T. F. Birrell, C.M.G., M. M. Lowsley, F. Ashe.

Majors (temporary Lieutenant-Colonels) S. L. Pallant, C. W. Holden.

Majors J. T. Johnson, G. Ormrod, E. L. Moss, M.C., W. J. Weston.

Captains (temporary Majors) P. S. Tomlinson, R. E. Kelly, F.R.C.S., R.A.M.C. (T.F.).

Captains T. Carnwath, W. R. Galwey, C. T. Edmunds, W. E. C. Lunn, O. R. McEwen, E. M. Middleton, N. V. Lothian, A. A. Atkinson (S.R.), F. Crosbie (S.R.).

Temporary Captains T. E. Parker, J. F. Bourke, D. Bell, K. G. Fraser, W. A. L. H. Henderson, H. P. Hamilton, G. B. Burwell, R. S. Dewar, R. A. Mansell.

Temporary Lieutenants J. V. Grant, C. S. Dodson, H. F. Brice-Smith.

Canadian A.M.C.

Colonel J. A. Roberts.

Lieutenant-Colonels W. B. Hendry, E. C. Hart.

Major C. H. Morris.

Captain W. A. Clarke.

New Zealand M.C.

Lieutenant-Colonel D. J. McGavin.

I.M.S.

Captain F. F. S. Smith, Assistant Surgeon H. A. H. de Silva.

Ghatur, No. 1267 1st Class Sub-Assistant Surgeon Mosamae Abdul; Shiek, No. 1420 2nd Class Sub-Assistant Surgeon Farid; Ganput, No. 6372 Naik A. B. C. Honaji.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Died on Service.

LIEUTENANT P. R. WARIYAR, I.M.S.

Lieutenant Pukhazi Raghava Wariyar, I.M.S., was reported, in the casualty list published on November 29th, as having died on service. He was one of a large batch of temporary officers appointed about three months ago.

Wounded.

Lieutenant-Colonel N. C. Rutherford, R.A.M.C.(T.F.)
Captain C. O. Donovan, R.A.M.C. (temporary).
Captain R. Farrant, R.A.M.C. (temporary).
Captain H. P. Harper, R.A.M.C. (temporary).
Captain A. C. Nilson, R.A.M.C.(T.F.).
Captain J. M. Young, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Baskett, Roger Mortimer, Second Lieutenant 16th Battalion Cheshire Regiment, son of Dr. B. G. M. Baskett, of Rayleigh, Essex, died of wounds on November 14th, aged 21. He was educated at St. Peter's School, York, and joined as a private in the Universities and Public Schools Corps in August, 1914. He served in France during the winter of 1915–16 and was gazetted second lieutenant in the summer of 1916.

Dwyer, Charles Henry, Captain Worcestershire Regiment, elder son of Dr. H. Dwyer, of Kingswood, Warwickshire, formerly of Hoylake, Cheshire, killed by a sniper while on reconnaissance duty on November 17th, aged 21. He was educated at the Lees, Hoylake, and at Shrewsbury, where he was captain of the gymnasium for two years, represented the school at Aldershot, and also got his colours for football. He got a commission on November 17th, 1914, went to the front in July, 1915, and had been mentioned in dispatches.

FitzMaurice, Lindsay, Lieutenant Prince Albert's Somerset Light Infantry, son of Dr. Richard FitzMaurice, of Littlehampton, late of Lindfield, Sussex, killed November 18th, aged 24.

Giusani, Lieutenant, son of Dr. Joseph Giusani, of Cork, killed recently.

Jones, Arthur Mervyn, Lieutenant Scots Guards, son of Dr. Alfred Orlando Jones, of London, died of wounds, aged 42. He was born in 1874, educated at Charterhouse and Oxford, entered the Scottish Horse in 1914, and became lieutenant in the Scots Guards on March 1st, 1915.

Sells, Archibald Jenner, Lieutenant Royal West Surrey Regiment, youngest surviving son of Dr. Charles J. Sells, of Guildford, killed recently, aged 34. He was educated at Abingdon School, and joined the Natal Mounted Police at the age of 18. He served in the South African war in 1900-02, and in the Zulu rising of 1906, gaining the Queen's medal with three clasps, and the King's medal. He subsequently left the police to take up sugar planting in Zululand, but when the war broke out came home to join the army. He went to the front in April, 1915, was wounded in July and invalided home, but returned in September.

Smith, Alexander Ayre, youngest son of Dr. Alexander Smith, J.P., of Camberwell, was killed on November 24th, aged 19. He was educated at Dulwich College Preparatory School and the Camberwell Grammar School, from which he entered the medical school of Charing Cross Hospital. When war broke out he had just completed his first year of medical study. He received his commission on May 21st, 1915, and was in the trenches from February to July last, when he was invalided home; he returned to the front on November 10th.

MEDICAL STUDENTS.

Brander, A. E., Second Lieutenant Argyll and Sutherland Highlanders, died on November 15th of wounds received on November 13th, aged 21. He was the son of Mr. George Brander, of Cupar, Procurator-Fiscal of Fife. He was educated at Glasgow Academy, and was a dental student until he got a commission in August, 1915. He went to the front last April.

Carson, Charles Graham, Captain Essex Regiment, M.C., younger son of Mr. William L. Carson, of Congleton, died of wounds on November 19th. He had completed his second year as

a medical student at Manchester University when war broke out, and immediately joined the Public Schools Company of the 5th North Staffordshire Regiment. He got his commission in the Essex Regiment in January, 1915, received his second star six months later, and was promoted to captain in February, 1916. He went to the front in November, 1915, was wounded in July last, but rejoined his battalion on September 30th. He was awarded the Military Cross on November 25th.

Dixon, Kenneth, Second Lieutenant Duke of Wellington's West Riding Regiment, died on November 25th of wounds received the same day. He was educated at Ripon Grammar School and Leeds Boys' Modern School, and before joining the army was a first year student of medicine at the university, where he was in the O.T.C.

McCusker, Patrick Joseph, Lieutenant Royal Dublin Fusiliers, reported wounded and missing, and subsequently killed November 13th–14th. He was the youngest son of Mr. James McCasker, of Glasgow, and of the Cottage, Neilston, and was educated at Stonyhurst College and at Glasgow University, where he was a medical student till he got his commission.

NOTES.

CANADIAN ARMY MEDICAL SERVICE.

IN some comments on the appointment by the High Commissioner of Canada of a Board of Inquiry into the administration of the Canadian Army Medical Corps in Europe, we expressed our belief that the tenor of its report would be such as to lead to the reinstatement of Surgeon-General Carleton Jones, and to justify Sir William Osler in withdrawing his resignation. As the terms in which this belief was expressed have, we are informed, led to some misconception, we hasten to say that the paragraph expressed our own hopes and anticipations, and was not intended in any way to imply any forecast of the decisions of the board, the sittings of which are not yet concluded.

EGYPT: MENTIONED IN DISPATCHES.

The *London Gazette* of December 1st contains a dispatch from General Sir Archibald Murray, Commander-in-Chief in Egypt, covering the operations of his force between June 1st and September 30th, 1916. The chief event of this period was the defeat of the Turks east of the Suez Canal, between August 3rd and 12th. Among the officers mentioned in this dispatch are the following medical officers:

Staff.—Surgeon-General J. Maher, C.B., A.M.S.; Lieutenant-Colonel (temporary Colonel) R. M. Downes, Australian A.M.C.; Lieutenant-Colonels P. S. Lelean, C.B., R.A.M.C., and C. J. Martin, Australian A.M.C.; and temporary Captain A. S. M. MacGregor, R.A.M.C.

A.M.S. and R.A.M.C.—Lieutenant-Colonels H. L. Eason, L. P. Phillips, T. W. Barrett, C.M.G., E. Macdonnell, W. Howorth, J. W. Mackenzie; Major A. H. Horsfall, D.S.O.; Captains R. B. Campion (S.R.), T. D. Kennedy (temporary), G. Wight (temporary), C. C. FitzGerald, M.C., A. H. Norris, N. H. H. Haskins, A. B. Sloan, R. S. Taylor, F. J. Green, J. H. Wood; Lieutenant M. Sommeville (temporary); Lieutenant and Quartermaster G. R. Lougher.

Australian A.M.C.—Lieutenant-Colonels G. P. Dixon, G. Croll; Majors W. Stansfield, E. P. White; Captains P. Dunningham, B. D. Gibson, D. D. Jamieson, G. H. Vernon.

New Zealand Medical Corps.—Captains G. H. Wood (killed), R. G. S. Orbell, M.C.

Indian Medical Service.—Colonel W. H. B. Robinson, C.B.; Major H. B. Drake.

ABSENCE OF SMALL-POX FROM FRANCE.

M. Deslandres recently presented to the Paris Municipal Council, of which he is a member, a report on the working of the vaccination service since the beginning of the war. In the period of twenty-eight months covered by the report only three cases of small-pox and three of varioloid were registered in Paris. There was one death. The last case was discovered on December 13th, 1915, and so far not a single case has been reported in 1916. Dr. Roux points out in a report to the Public Health Council that "this is the first time that a war waged in French territory has not been accompanied by an epidemic of small-pox."

The Mesopotamia Statutory Commission does not expect to be able to present an interim report before Christmas.

AN institute for bacteriology, chemistry, and the manufacture of vaccines was recently opened at Buenos Aires. Dr. Magnin, head of the chemical department, reported that researches had been begun which it was hoped would help to relieve the difficulty caused by the scarcity of imported drugs.

MESSRS. LOCHELONGUE AND DUBARD (Dijon) recommend a solution of hypochlorite of magnesia, with or without the addition of hypochlorite of lime, for the disinfection of the surgeon's hands. The hands are first washed with soap and water, and then soaked from four to six minutes in a solution of hypochlorite of 2.5 to 3 per cent. With a solution of 1.8 to 2 per cent. the hands must be immersed for eight minutes.

England and Wales.

THE CENTRAL MIDWIVES BOARD.

THE report presented to Parliament by the Central Midwives Board for the year ended March last states that the Midwives' Roll on that date contained the names of 40,513 women, of whom the trained midwives numbered 30,543, or 75.4 per cent., and the untrained 9,970, or 24.6 per cent.; it is pointed out, however, that a much larger proportion of the untrained actually practise than of the trained. The institutions in which midwives could be trained numbered 150, and 123 medical practitioners are recognized as teachers of midwifery for the purpose. The Privy Council had approved the suggestion of the Board that the period of training should be extended from three to six months and the new rule had come into operation on July 1st last. The Board refused to agree to a suggestion of a district nursing association that the cases of personal delivery required by candidates for examination should be reduced from twenty to fifteen for the period of the war. The revised rules of the Board will be in operation for five years from July, 1916.

The report stated that cases of "covering" by medical practitioners of uncertified women acting as midwives were by no means infrequent. The most open method was where the uncertified woman undertook the case and delivered the patient, and then sent for the doctor, who went perhaps once and signed the maternity benefit form, but did not examine or attend to the patient; for this the uncertified woman pays him a small fee. Another method was where the doctor booked the case as his, but arranged with the uncertified woman that she should deliver the patient and only send for him in case of complications. If not so sent for, he probably called once during the puerperium, and signed the maternity benefit form. If any question is raised it was claimed that he was unavoidably prevented from attending the delivery and the uncertified woman was acting as his nurse. Local supervising authorities made little or no effort to deal with these cases, and it had been left to the Board to take proceedings before the General Medical Council.

Difficulty still continued in most districts as to the payment of the fees of medical practitioners called to the assistance of midwives. The Board formerly suggested that boards of guardians should pay a fee on an agreed scale, but it is now suggested that a clause should be inserted in the English Act, similar to that in the Scottish Act, ordering the local supervising authority to pay a fee on a scale fixed by the Local Government Board, the local authority to have power to recover the sum from the patient if able to pay. This the Board considers would go far to meet one of the chief difficulties in carrying out the Midwives Act, and would greatly conduce to the welfare of the poorer mothers of the community.

LONDON WATER.

Dr. A. C. Houston, Director of Water Examination, Metropolitan Water Board, is in a scientific sense the tutelary deity of London's water supply, and for his success in safeguarding them Londoners owe him a deep debt of gratitude. They have also cause to be thankful to his staff to which, in his tenth annual report, he pays a graceful tribute.

The report describes the results of the chemical and bacteriological examination of the London waters for the twelve months ended March 31st, 1916. The general quality showed no deterioration during the year, although the extra pressure of work thrown upon the engineering department by the war was serious.

The most important points in Dr. Houston's Twelfth Report on Research Work, dated October, 1916, relate to "water microbes" giving the cholera red reaction, and to sterilization. The number of samples examined for the cholera vibrio was 2,488 (520 raw, 1,968 filtered). Of 6,050 colonies studied, 5,872 (97 per cent.) were excluded as not giving the cholera red reaction; 178 (about 3 per cent.) falling under 86 apparent groups were provisionally accepted, as they gave the twenty-four hours' cholera red reaction. Of these 178 microbes, 153 (86 per cent.) were excluded as gas producers, leaving 25 (14 per cent.) falling under 13 apparent groups, which were provisionally

accepted, but which eventually failed to conform to the true cholera standard as judged by the agglutination and other tests. "Having regard," says Dr. Houston, "to the number of samples of water examined and the number of bacteria studied, it might almost be said that there are no microbes in non-cholera infected water liable to be mistaken for the true cholera vibrio if suitable tests are applied." But he warns us that it is necessary to confine the conclusions to the particular waters investigated—namely, raw and filtered Thames, Lee, and New River. With other waters and under other conditions of experiment the results might be different.

Dealing with sterilization Dr. Houston briefly refers to experiments made as to the effect of light. Under the conditions of experiment there seemed to be no doubt that light favours sterilization, notwithstanding the fact that it was frequently noted that the blue reaction with potassium iodide and starch was less pronounced or disappeared altogether in the samples exposed to light in contrast to those kept in the dark. It is pointed out, however, that it does not follow that the same results would be obtained under practical outdoor conditions. The results as regards sterilization do not seem to have been due to the bactericidal effect of light, as the bottles containing the smaller doses of bleaching solution nearly always yielded positive results, and indeed served as control experiments. It is stated that Rideal advocates the use of hypochlorites for removing the taste from water infected with algae, and also as a substitute for copper sulphate to inhibit the growth of algae. Dr. Houston has found that with London water potassium permanganate in doses of 2.5 to 5 lb. per million gallons is much more effective in removing the taste; with hypochlorites, he says, there is considerable danger of merely substituting one taste for another, or even of introducing a superadded taste. Copper sulphate is a better algicidal than bactericidal agent, the converse being true of the hyperchlorites. These, however, even in doses which produce no taste, have a considerable inhibitory power over the growth of algae, although the good effects are usually only temporary. In permissible doses hypochlorites apparently inhibit rather than destroy. Copper sulphate has, in Dr. Houston's experience, exercised a more pronounced and more lasting effect than hypochlorites, the respective doses varying, but usually being about 0.5 part of copper sulphate and 0.5 part of available chlorine per million parts of water.

The war having caused an unprecedented rise in the price of coal it became imperative to reduce its consumption to the lowest practicable limit. In these circumstances chlorination experiments on Thames water were started on May 1st, 1916, and have been continued without intermission up to the date of the report (October, 1916). At first 70 to 80 million gallons of water were treated at Staines, but from June 16th onwards about 50 million gallons were treated there, and about 30 million gallons at Hampton. The treatment during May was largely experimental. The dose varied from 1 in 1 million to 1 in 3 millions in terms of available chlorine. The results varied, but the information obtained during the month was invaluable as a guide to the subsequent treatment. From June 1st onwards the dose was constant, and as nearly as possible 1 in 2 millions, or 0.5 in 1 million (= 15 lb. of chloride of lime per million gallons of water). The results show that the treatment was very successful bacteriologically, although the water was not always completely sterilized. The water had no taste, and not a single complaint was received from the consumers of the treated water, numbering over 2 million persons. On a conservative basis the saving in cost has exceeded £200 a week, or £3,400 for the period dealt with (June to September). Dr. Houston says it would not have been justifiable to have carried out the treatment in order to save money if it had involved the slightest risk of injury to the consumer. This, however, was far from being the case, the treated water being purer bacteriologically than the Staines stored water, and in all respects quite innocuous. In reply to a possible objection that the addition of chemicals to London water is a retrograde step, he says that under war conditions sentiment should give way to expediency. It must be remembered, he urges, that the gain has been double. A large sum of money has been saved without any detriment to health, and the national interests have been served by a large reduction in the amount of coal consumed.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

The statistical report on the ordinary expenditure of 109 London hospitals for the year 1915, which is the thirteenth annual statistical report prepared by Mr. Maynard for the Governors of King Edward's Fund, is smaller than its predecessors, several tabular comparisons which would have been misleading in war time having been omitted. The report, however, provides much interesting information. Confining our attention to the larger general hospitals with medical schools, we find that the number of naval and military in-patients treated "by understanding with the authorities" (and therefore a minimum figure) was 18,028. The figure for all the 109 hospitals was 28,645.

The total cost per occupied bed in the case of nine of the great hospitals (King's College Hospital and St. Thomas's are omitted, since the numbers of beds occupied by military patients were such as to convert them, statistically speaking, into military hospitals) was on the average £98 13s. 10d. The range of variation within the series is very great, being in one hospital as high as £110 16s. 7d., and in another as low as £68 15s. 6d. But the last figure is the only one below £90. The same remark applies to particular items of expenditure. Thus the cost of provisions averages out for the whole series at £33 7s. 5d., and is more than £30 in all but one, the hospital providing the lowest figure for total expenditure, where it was £24 5s. 5d.

It is pointed out that the cost of working at hospitals has been affected by the rise of prices, by the shortage of workers both skilled and unskilled, and by changes in the number of occupied beds due to the provision of beds for wounded soldiers. Further, before drawing conclusions from the figures, "it must be understood that they profess to give only the material for a comparison of outlay, and the question in each case remains how far a given cost above the average is justifiable, or whether a given cost below the average is attained at a sacrifice of some element of full efficiency." These warnings preclude us from critical comparison, but the following facts are of interest: In the case of the nine great hospitals with medical schools the average number of occupied beds per hospital was 351, and the average cost per bed of provisions £33 7s. 5d. For seven large general hospitals without medical schools the average number of beds occupied per hospital was 157, and the cost of provisions per bed £29 16s. 6d. In the case of fourteen smaller general hospitals with an average number of occupied beds per hospital of 53 the cost was £30 2s. 8d. These averages do not conform to the rule that the average capitation cost of catering diminishes as the number to be fed increases, but they are to be studied in the light of the following remarks:

> The expenditure on provisions and on the other accounts which relate to the purchase of goods is given without reference to stocks in hand, but taking one hospital with another it is probable that the stocks do not vary very much from year to year. Were it otherwise, however, a considerable difference in the expenditure of different years might be expected.
>
> Variations in the cost of provisions may, in some cases, be partly accounted for by the arrangements made with officials who do not sleep on the premises or who provide their own board. Where similar officials take meals in the hospital the cost of provisions would be increased and salaries and wages presumably diminished.
>
> The cost of provisions may also be affected by the maintenance of private nursing establishments. At some hospitals, however, the nurses return to the wards after taking private cases; during their attendance on such cases they, of course, do not board in the hospital.

These comments illustrate the difficulty of interpreting averages. Another factor may be that voluntary contributions in kind are relatively more numerous in the smaller institutions. This perhaps explains the very low cost per bed of provisions in cottage hospitals (£23 12s. 3d.).

RADIUM IN CANCER.

At the annual meeting of the Christie Hospital (Cancer Pavilion), Manchester, held on November 24th, it was reported that twenty-seven patients suffering from cancer had been admitted for treatment by radium, and Sir H. Miers, who presided, said that the progress made in recent years in the alleviation of the scourge of cancer lent some ground to the hope that we were standing on the brink of discoveries which would lead to cure, and the step from cure to prevention might be only a short one.

Professor Wild, in replying to a vote of thanks to the honorary staff, said that it was as yet too soon to draw any dogmatic conclusions from the cases which had been treated with radium; it would be necessary to wait for years to see whether the results obtained were permanent or not. No experimental work was carried on at the Cancer Hospital; all the work was done at the university laboratories, and such work would ultimately prove of the utmost value. Dr. Burrows said that the great difficulty in dealing with cancer was ignorance of its cause. He had had two inoperable cases under the radium treatment, and the patients were now apparently quite well. Two cases were only few, representing about 8 per cent. of last year's cases, but it must be remembered that they were cases which formerly would have been left to die.

Manchester Consumption Hospital.

At the annual meeting of the Manchester Hospital for Consumption and Diseases of the Throat and Chest, held on November 20th under the chairmanship of Sir Kenneth Crossley, it was announced that the Crewdson extension at the Crossley Sanatorium had now been turned into an extra ward instead of being a mere recreation room, and in this way six more beds were provided. Owing to the war, the scheme of the Manchester Corporation for providing beds for 400 children at the Abergele Sanatorium had been postponed. The plans were ready, but no progress could be made; the scheme would cost far more than its promoters anticipated; the city architect had said the cost would not be much less than £100,000. Mr. W. Davies, who is chairman of the Manchester Insurance Committee, said that that committee had a feeling of disappointment with the results of sanatorium benefit, believing that a large amount of the money spent on sanatorium treatment was being wasted owing to the fact that patients on leaving a sanatorium and returning to their old conditions often soon broke down again. If the children could be properly dealt with the disease would go out in time. The report showed that 297 patients had received treatment at the Crossley Sanatorium in the course of the year, and 246 at the Bowden Institute. At the out-patient department at Manchester 6,371 new patients were examined and received treatment, and the total attendances during the year numbered 26,513. The income from all sources for 1915 was £18,750, and the expenditure £18,686.

The David Lewis Epileptic Colony.

The report presented to the annual meeting of the subscribers and governors of the David Lewis Epileptic Colony at Warford, Cheshire, over which Lord Sheffield presided, showed that the daily average number of colonists for the year was 318. The medical report of Dr. A. McDougall stated that seven deaths from epilepsy had occurred, but otherwise the general health of the colony had been good. A few former patients, in whom the disease had been arrested, had joined the army, and had borne the strain well. Many others had desired to enlist, but few of the patients at the colony were suitable. Farming operations had resulted in a profit of £420, the poultry farm alone bringing in £60. Great interest had been taken in the making of garments for wounded soldiers, and up to the end of August 100 suits of pyjamas had been made and distributed among the military hospitals of the district. The Manchester Corporation had during the year removed about twenty cases from the colony, having made its own arrangements for looking after them. The treasurer's report showed that there was in hand about £2,000 on the income and expenditure fund for the year, compared with £1,100 last year. The honorary officers and the committee were thanked for their services, and re-elected for the coming year.

Treatment of Venereal Diseases.

The Corporation of the City of London has adopted the recommendations of its Sanitary Committee, founded on a report by the Medical Officer of Health containing a scheme for the prevention and treatment of venereal diseases. A centre is to be established in Golden Lane, and arrangements entered into with St. Bartholomew's Hospital for the provision of the necessary medical and surgical staff, and for drugs, exclusive of salvarsan and its congeners, at an estimated gross cost of £1,800 for the first year. These special arsenical drugs are to be purchased as required at an estimated cost of £400 for the twelve months. The approval of the Local Government Board is to be sought, and, subject to it being obtained, the net charges on the Corporation are estimated at £250 capital and £550 maintenance.

The Corporation also adopted the following resolutions with reference to treatment by unqualified persons and secret preparations:

> That in the opinion of this court administrative measures for the diagnosis and treatment of venereal diseases will only attain their maximum effectiveness in protecting the public health when the treatment of such diseases by unqualified persons is prevented by law.
>
> That in the opinion of this court it is desirable that the recommendation 58 (3) of the Patent Medicines Committee of the House of Commons endorsed by the Royal Commission on Venereal Diseases, "That all advertisements of remedies for diseases arising from sexual intercourse or referring to sexual weakness be prohibited," should at once be carried into effect.

Scotland.

Professor Arthur Robinson has been elected president of the Royal Physical Society of Edinburgh. At a meeting over which he presided on November 27th it was announced that a portrait of the late Sir William Turner, after a painting by Sir James Guthrie, had been presented by Dr. Logan Turner.

Glasgow Medical Charities.

Under the will of Mrs. H. S. Morrison half the income of the residue of her estate of £60,000 is to be devoted to giving relief by grants to non-commissioned officers, or men, of the navy or army, whether of the regular or auxiliary forces, resident in Glasgow, who have been permanently disabled or incapacitated in the war. From the remainder of her estate the testatrix left bequests to the following Glasgow institutions: The Royal, Western, and Victoria Infirmaries, the Cancer Hospital, the Hospital for Sick Children, and the Home for Infirm Children, the Association for the Relief of Incurables in Glasgow, and the Higginbotham Sick Poor Nursing Association.

At the annual meeting of the last-named association on November 29th the Lord Provost recalled the enthusiasm with which the foundation of the association by Mrs. Higginbotham in 1875 was received. It had since done magnificent work, and had been able to continue it during the past year. The report stated that the number of cases attended during the year had been 2,783, but that there was a deficit. Mr. A. E. Maylard said that the district nurses, by seeing that the instructions of the physicians and surgeons were carried out after the patients left the infirmaries were of the greatest help, and if the public realized what good work they were doing there would never be a deficit.

Disabled Soldiers.

The Public Health Committee of Edinburgh Town Council recently received a deputation from the Disablement Committee of the Local Pensions Committee, with reference to the treatment of discharged disabled men suffering from tuberculosis. The chairman of the Disablement Committee stated that its aim was to ensure the treatment of soldiers and sailors discharged on account of tuberculosis, and that this should be given as far as possible in the vicinity of their homes. Insured men would have the benefit of Insurance Act allowances, but provision was also being made by the Statutory Committee whereby treatment would be extended to uninsured men. With regard to epilepsy it was suggested that open-air work in the vicinity of public institutions was needed. The Public Health Committee instructed a subcommittee to prepare a report of the accommodation which could be provided for the treatment of the tuberculous and epileptic cases.

Arrangements are being made by the directors of the Edinburgh Blind Asylum whereby blinded Scottish soldiers may begin their initial training in Edinburgh. The course recommended by the committee should be regarded as a curriculum in three stages: First, reception and preliminary training; secondly, systematic work to enable them to earn a living in whole or in part; thirdly, after-care. The training should not be hastened. Deputations consisting of the convener and Dr. Burns had

visited London, where they encountered a mistaken idea of the benefits which would arise from centralizing all efforts in London. The number of blinded soldiers returning to London was considerable. In one week upwards of thirty blinded men had been received at one hospital in London, and some of them belonged to Scottish regiments. It is believed that a great saving of money could be effected were all Scottish blinded soldiers and sailors sent direct to Craigleith Hospital, where they would be able to have the advantage of the provision made at Newington House, which is managed by the Edinburgh Blind Asylum.

Red Cross Work in North-East Scotland.

A statement concerning Red Cross work in the North-Eastern District of Scotland shows that the number of beds available in auxiliary hospitals on November 25th was 875. Of these 634 were occupied. On November 27th the number was 651. The transport work in connexion with the 1st Scottish General Hospital (Aberdeen) was taken over by the Scottish Branch on August 25th, 1915. The main hospital is at Oldmill, three and a half miles from the railway station; the other centres are at the High School in Albyn Place and the Central School in Schoolhill. Patients are also sent to the Royal Infirmary and Morningfield Hospital. Between August 25th, 1915, and November 20th, 1916, 66 ambulance trains arrived in Aberdeen, carrying 3,686 sitting and 3,793 cot cases —a total of 7,479. The patients were distributed to the various hospitals by the Scottish Branch. A meeting of the Executive Committee of the County of Aberdeen Branch of the Red Cross Society was held on November 24th, to consider the raising of funds for the equipment of an orthopaedic department in Oldmill Hospital, as had been suggested by King Manoel as representative of the British Red Cross, and Colonel Robert Jones of Liverpool, Inspector of Military Orthopaedics, on their recent visit. Subscriptions will be invited from at least the North-Eastern District of Scotland, including the whole district which the orthopaedic centre at Oldmill would serve—namely, the Highland divisional area. It was pointed out that the department would be needed in connexion with casualties long after the end of the war, and would also be very useful to the civil population in time of peace.

Ireland.

Local Government Board and Doctors of Military Age.

Sir Acheson MacCullagh, M.D., Medical Inspector, Local Government Board, attended a meeting of the Ballinrobe Board of Guardians and explained the reasons of the Local Government Board for refusing to sanction the appointment of Dr. Coghlan, who is of military age, to the Cappaduff dispensary district. Desirable as it was to see a doctor in every district, yet it must, he said, be remembered that the war had to be carried on, and that all were bound to pay attention to the necessities of those who were fighting for them. That was the policy of the Local Government Board and of all the Local Government Boards; they would not sanction the appointment of any person of military age, and did not see why boards of guardians should make such appointments. If a doctor was unfit for military service his appointment would be sanctioned for the period of the war on the production of a certificate to that effect, but while he was fit to serve his appointment would not be sanctioned, as it was his duty to join the army; looking at the question dispassionately, it was a disgrace for any person who was able and fit to serve not to do so, as the needs for medical attention to their bleeding countrymen were becoming more urgent. Dr. Coghlan maintained that he was unfit for military service, and, on the suggestion of Sir Acheson MacCullagh, the guardians agreed to appoint him temporarily on his furnishing a certificate from the military authorities of his unfitness for military service.

Maternity Centres.

At the annual meeting of the Bangor (co. Down) District Nursing Society Sir John Byers delivered an address in which he said that the war had brought prominently before them the care of the child, a matter of the greatest importance, because, owing to the fall in the birth-rate, the terrible wastage of infant lives, and the deaths of so many potential fathers, special care was necessary to reduce the loss of infant life that took place before and after birth and to maintain and improve the standard of health of mothers and offspring. When people discussed what should be done after the war they should first consider whether there would be a sufficiency of a vigorous British race to carry on the various enterprises, industrial, commercial, and so forth, that would then be urgently needed. The solution of this, the most pressing home problem of the present moment, depended on how far skilled assistance and advice could be brought to bear on the expectant mother. In large cities maternity centres for the education of midwives and medical students, which ought to be in direct touch with pathological laboratories, should be created and subsidized. Expectant mothers might be divided into two groups—those in apparently good health when first seen, and who only needed regular visitation, supervision, and advice; and those who required special attention in order that they and their children might be saved. Without a few beds which a maternity or cottage hospital, county or union infirmary could provide, any scheme, however well planned otherwise, would be found wanting. To discover the causes of prenatal death clinical observation and research, as well as a study of the mother's environment were necessary. In the case of every woman approaching her first confinement it should be ascertained whether there was any condition that might prevent a natural birth, so that preparatory arrangements might be made for her to have the advantage of the best and most modern obstetric methods. This work of the maternity centre must be supplemented by home visits by the nurses of the centre or of other philanthropic agencies; by the female sanitary inspectors of the health authorities, or by dispensary midwives. The schools for mothers could help by inducing prospective mothers to report themselves at the maternity centre. The notification of pregnancy was at present Utopian, and unfortunately the maternity benefit of the Insurance Act had done absolutely nothing for maternal and child welfare, as it was given simply on a certificate from a midwife or a doctor after the birth of the child. If in order to obtain this benefit it had been made obligatory that the expectant mother should report herself at fixed times to a doctor before her child was born, many lives, both of mothers and children, could have been saved. In the smaller towns and in country districts a combined maternity centre and babies' club could easily be established in connexion with an existing nursing association, the local doctors being requested to help in turn. A few beds could be retained in the cottage hospitals or county or union infirmaries for cases needing such rest and care.

Canada.

Poliomyelitis in Canada.

The recent epidemic of infantile paralysis in New York has naturally caused a good deal of anxiety in Canada, where sporadic cases have been reported from all parts of the country, and a number of deaths have occurred. An outbreak recently in Montreal made it necessary to close some of the schools. In the Province of Ontario, during the month of September, seventy-six cases and seven deaths were reported, and nineteen cases during the first nineteen days of October.

Tuberculosis.

The fifteenth annual meeting of the Canadian Association for the Prevention of Tuberculosis took place at Quebec on September 12th and 13th, under the presidency of Senator J. W. Daniel, M.D., of St. John, New Brunswick. The members were welcomed by the Lieutenant-Governor of the Province of Quebec, and Dr. Daniel in his address said that measures for the prevention of disease should be undertaken by the community as a whole, upon whom the cost should fall, and not be left to a few. Authorities all over Canada were beginning more and more to appreciate the fact. Until the poor as well as the rich were able to

dive in houses provided with adequate and proper sanitary appliances, where they would have room to breathe and lots of fresh air and sunlight, it would be impossible to get rid of tuberculosis. The people must be educated in elementary sanitary knowledge and the housing problem must be solved. Much had already been accomplished, and in St. John, New Brunswick, the percentage of deaths from tuberculosis had fallen from 11.8 in 1900 to 6.7 in 1915. It was reported to the meeting that during the past year the municipal hospitals for the care of advanced cases of tuberculosis had been opened at Quebec and at St. John. The latter, with fifty-seven beds, were very soon filled. Sanatoriums in Prince Edward Island and in the county of Waterloo, Ontario, had been completed, and at Gravenhurst, Ontario, the Minnewaska Sanatorium had been enlarged to double its former capacity, and the Calydor Sanatorium, a private institution, under the direction of Dr. Parfitt, had been opened. In British Columbia a private sanatorium has been opened at Kamloops, and a pavilion has been added to the King Edward Sanatorium at Tranquille. Pavilions have also been added to the Muskoka Free Hospital and the Brantford Sanatorium, in the province of Ontario, and hospital tuberculosis clinics have been organized in Toronto. In 1908 there were only 250 beds reserved for patients suffering from tuberculosis in the whole of Canada; now there are 2,000.

The difficulty of Canada's problem of caring for the tuberculous is now increased by the addition of a considerable number of soldiers suffering from the disease. A few weeks ago it was reported that there were 397 military patients under treatment in the various sanatoriums in the Dominion, of whom nearly 60 per cent. had never been overseas. There are also a number of Canadian soldiers now undergoing treatment in England who will return to Canada as soon as proper hospital accommodation is provided for them. The matter has been under the careful consideration of the Military Hospitals Commission, and on September 15th a meeting of experts was called at Montreal. The chair was taken by Dr. F. J. Shepherd of Montreal, and among those present were Lieutenant-Colonel A. Thompson, medical superintendent of the hospitals under the Commission, Dr. Baldwin of Saranac Lake, Drs. Parfitt and Elliot of Muskoka, and Dr. Byers of Ste. Agathe. It was advised that temporary arrangements should be made immediately with existing sanatoriums for the treatment of tuberculous soldiers during the coming winter, and that property sites should be bought in suitable localities and permanent buildings of the most modern type built thereon. The sanatorium at Frank, Alberta, which has accommodation for 120 patients, has been taken over by the Commission, and this with the sanatoriums at Kamloops, British Columbia, Ninette, Manitoba, and Calgary, will provide enough accommodation for the present in the West. In Ontario the Hospital for the Insane at Whitby has been converted into a sanatorium. In Quebec, the Lake Edward Sanatorium and that at Ste. Agathe will be utilized by the Commission, and in the Maritime Provinces the sanatoriums at St. John, New Brunswick, Kentville, Nova Scotia, and Charlottetown, Prince Edward Island. It has been found that the soldier frequently becomes restive and nervous under treatment; he finds the rest and regulation under medical routine unnecessary and tiresome, and becomes despondent and sometimes even insubordinate. Medical officers in charge of such patients therefore are in favour of giving suitable occupation, graded according to the man's condition, and have requested the Military Hospitals Commission to provide workshops and instructors. In addition to manual work and academic training, telegraphy, stenography and typewriting, mechanical and industrial drawing, and automobile driving might be taught, and the moving picture machines installed, which might be used both for instruction and recreation.

Alberta Medical Society.

The eleventh annual meeting of the Alberta Medical Society took place at the University of Alberta, Edmonton South, on September 21st and 22nd, and in spite of the fact that a large number of the members are on overseas service, proved one of the most successful meetings ever held by it. Dr. T. H. Whitelaw, medical officer of health of Edmonton, stated that, to take a low estimate, one-third of the medical men of the province of Alberta had already given up civil practice and had joined the military forces. Out of 118 medical practitioners in Edmonton, 42 were serving, and 45 out of 100 practitioners in Calgary. One of the brightest and most brilliant practitioners in the province, Captain Monkman of Vegreville, had made the supreme sacrifice. Dr. Whitelaw dwelt on the importance of providing for the care and treatment during illness or accident of residents of outlying districts remote from hospital centres. It was the duty of the medical men of the province to assist by their counsel and advice the movement for providing hospital facilities within a reasonable distance of every settler in the province. A Free Public Hospitals League had recently been started in Calgary and was actively engaged in a campaign with this object in view. Another matter of supreme importance to the future welfare of the province was the establishment of a provincial sanatorium for the treatment of tuberculosis. In concluding his address, Dr. Whitelaw spoke of the excellent beginning made by the Faculty of Medicine recently established at the University of Alberta. The enrolment of students had been much curtailed by the fact that almost 50 per cent. of the first, second, and third-year students had gone to the front with ambulance corps. An arrangement had been made with the Universities of McGill and Toronto whereby medical students of the University of Alberta could take the fourth and fifth years of their course at either of them. The question of Imperial reciprocity, which had been touched on by the president, was brought up by Dr. John Park of Edmonton, who was greatly in favour of the establishment of reciprocal relations between the province of Alberta and Great Britain. It was resolved that the provincial parliament be requested to take the necessary steps to bring about such reciprocity.

Approval was expressed of the efforts to extend the hospital facilities in the country districts, and it was recommended that cottage hospitals should be established under the direction of local committees, and made as self-supporting as possible. A special committee was appointed to investigate the physical and mental condition of the child and the causes of the present unfavourable conditions. It was decided that pamphlets containing information and statistics should be prepared for general distribution as a means of educating the people of the province in matters relating to public health, and that the Provincial Medical Council should be requested to make a grant to assist in the publication of literature and the work of the committee.

A Physician's Fee.

A case recently came before the Superior Court of the Province of Quebec, in which a physician claimed the sum of $2,495 for professional services rendered, stating that at the request of the defendant he had devoted practically all his professional time to him during his illness. The defendant expressed his willingness to pay $750, but considered the amount claimed to be exorbitant. The defendant was ordered to pay the sum of $975, with interest and costs. In summing up the case, his lordship said that when no express contract had been entered into between the physician and patient (and in the present case no such contract had been made), the amount which might be considered reasonable compensation for the services given was to be determined by the learning, skill, and professional standing of the physician and by the difficulty of the case.

Sydney.

Subsidized Hospitals and Government Employees.

A meeting of the members of the honorary medical staffs of hospitals receiving subsidies from the New South Wales Government was held at the British Medical Association building, Sydney, on August 10th, 1916. The chair was taken by Dr. Sinclair Gillies, the President of the New South Wales Branch of the British Medical Association, who said that the meeting had been called to consider the effect upon the medical profession of a circular issued on July 1st, 1916, from the office of the Director-General of Public Health to the secretaries of the committees of

hospitals in receipt of subsidy from the Government. The circular was as follows:

Treatment and Maintenance in Subsidized Hospitals of Government Employees Injured in the Execution of their Duty.

I am instructed to inform you that it has been brought under notice of the Director-General of Public Health that on several recent occasions members of the police force injured in the execution of their duty, and admitted to subsidized hospitals for treatment, have been charged sums of money in varying amount for what has been termed "maintenance whilst in hospital."

The Director-General has drawn the attention of the Minister to the subject, and approval has been given to the issue of notice to all hospitals subsidized from public funds that the following shall be regarded as one of the conditions under which subsidy is granted, in addition to those already in force and enumerated in circular instruction from the Chief Secretary's Office, dated December, 1913:

"10. That any employee of the Government of New South Wales who may be injured in the execution of his duty shall, on application, be received and treated, and, if necessary, admitted for further treatment free of all charges for such treatment and maintenance, in any hospital in the State receiving subsidy from the Government."

Your Committee is requested to note that strict observance of this condition will be insisted upon in future.

This circular had been considered by the committee of certain hospitals, and the matter had been referred to the members of the honorary medical staff, and the meeting had been called in order that uniformity of action might be obtained.

Dr. F. Antill Pockley moved:

1. That, while always ready to treat gratuitously all persons whose means are inadequate to pay for such attendance, we reaffirm the principle of refusing, except in cases of urgency, to be exploited by persons who are in a position to pay for our services, and we cannot differentiate between employees of the Government and others.
2. That the secretaries of the medical boards of the hospitals concerned be instructed to convey the above resolution to the managing boards.

Sir Herbert Maitland seconded the motion, and after full discussion it was carried unanimously.

VITAL STATISTICS.

According to the Government statistician's report on the vital statistics for the year 1915 the marriage rate was 9.70 per 1,000 of population. This is the highest since the year 1857. The number of infants born during the year was 52,885, of whom 27,105 were males and 25,780 were females. The birth-rate was 28.31 per 1,000 of population. During the period 1906 to 1909 the rate was below 28; it exceeded 28 in the two following years and reached a maximum of 29.9 in 1912. In 1913 it was 28.81, and in 1914 it was 28.93. The illegitimate birth-rate was 1.44 per 1,000 of population, equivalent to 5.07 of the total births. The illegitimate birth-rate has tended to decrease during the past ten years. The death-rate was 10.50 per 1,000, which is slightly higher than the average for the previous period. The infantile death-rate was 68.1 per 1,000 births. There were 2,854 deaths from cardio-vascular diseases, 1,297 from tuberculosis, and 1,385 from cancer.

Correspondence.

EPSOM COLLEGE.

SIR,—In consequence of the loss of many annual subscriptions as a result of the war, and in part due to the fact that so many medical men are engaged away from their homes on military duties, it becomes necessary to obtain fresh annual subscribers if the good work of the Royal Medical Foundation attached to Epsom College is to be maintained.

Your readers will see from the advertisement which appears on page 67 that a sum of £4,500 has to be collected each year in order to provide the same number of Pensions and Foundation Scholarships which hitherto have been given annually out of the Foundation Fund of the College.

To reduce the number of beneficiaries would be deplorable from every point of view, more especially as the present excessively high war prices are greatly increasing the hardships endured by the very indigent persons who are candidates for the benefactions given by the College.

Much help might be rendered if those interested in the welfare of the College would urge their friends to become subscribers or donors, to whom in return certain voting privileges are afforded. Donors of ten guineas and collectors of twenty guineas are life governors, and subscribers of one guinea annually are governors during the continuance of their subscriptions. Such life governors and governors have ten votes each, which may be given for Foundation Scholars alone, or for Pensioners alone, or be divided between the two classes. Smaller contributions are gladly received.

In conclusion, I desire to make a very earnest, urgent appeal to the profession not to allow other new professional philanthropic movements, however excellent in themselves, to prejudice the claims and diminish the possibilities for doing good of Epsom College Foundation Fund.—I am, etc.,

HENRY MORRIS,
Honorary Treasurer.

37, Soho Square, W., Dec. 1st.

MEDICAL CERTIFICATES FOR RECRUITS AND WAR WORKERS.

Suggested Printed Forms.

SIR,—With reference to Sir Donald MacAlister's grave warning in regard to the issue by practitioners of medical certificates for recruits and war workers, and the remarks thereon contained in the leading article in the issue of December 2nd, may I suggest that this question could be both readily and satisfactorily solved by the provision of printed certificate forms drawn up on somewhat similar lines to that of a medical examiner's report to an insurance company? Among the advantages of such forms may be mentioned the following:

(*a*) The certificate itself would be more complete and comprehensive.

(*b*) There would be one uniform standard of information for the use of tribunal examiners and officers, and managers of war departments.

(*c*) Greater care would be exercised in filling up a formal certificate.

(*d*) The necessity of filling up a printed form would make the doctor more independent and less likely to be influenced by any special consideration for his patient.

(*e*) It would obviate any necessity of referring to the question of fitness or unfitness for any form of military service, which is a matter solely for adjudication by the medical boards and the tribunal medical officers. Reference would only be made to medical facts.

The certificate forms, in addition to the usual spaces for name, age, etc., should contain spaces for the following headings:

(*a*) Are you the examinee's ordinary medical adviser?
(*b*) What abnormal symptoms, if any, are present?
(*c*) What opportunities have you had of verifying these symptoms?
(*d*) Is the examinee suffering from any illness, disorder, or disease?
State the medical evidence.
(*e*) Is it necessary or advisable to obtain the opinion of a consultant or expert?
(*f*) Special remarks.

The certificate should terminate with such words as:

I declare to the best of my knowledge and belief that the statements contained in this certificate are correct.

The certificate should commence with the statement:

No opinion is to be expressed as to the man's fitness or unfitness for any form of military service.

I would suggest that the certificate forms might be drawn up by the Central Medical War Committee and issued either free or at cost price to medical practitioners on application to the offices of the Committee at 429, Strand, W.C. The War Office might undertake the cost and issue of the forms.—I am, etc.,

R. MURRAY LESLIE, M.D.

London, W., Dec. 4th.

SIR,—I would like to point out that the difficulty of many practitioners in the matter of certificates causes more worry and anxiety than any other part of their work nowadays.

Before long people will not be allowed to perform their

simplest daily habits without possessing medical certificates for each.

Men who are "called up," in the majority of cases, go to their doctor for at least a statement of the illnesses they have gone through in previous years, and, in cases where they employ a solicitor, this course is very frequently suggested to them, however trivial the nature of the ailment, in the hope that it will influence the lay tribunal; and if they have had no illness themselves, they want a note to say that their wife is not strong enough to carry on their work, if left. Of course the conscientious doctor refuses this if it is not his opinion, but it leads to much unpleasantness.

Munition workers, and all people on work of importance, now require a certificate if they are off work a single day, and this causes an infinite amount of responsibility, and in many cases worry, as the vast majority of their complaints are of a subjective nature, and the certificate if given, amounts to an endorsement of the patient's statement merely. Moreover, munition girls have the idea that they can have compensation for all manner of trivial complaints, and they go to the doctor with all manner of tales to this end.

For all illnesses, however trivial, soldiers' relations expect to be able to have a certificate to get their soldier home, and the frequent refusals which this leads to add to the misery of these horrible days. Soldiers on leave "expect" to have certificates to extend their period of leave for "subjective" complaints. The requests for "stimulants" orders which one has to refuse are innumerable. The certificates with reference to the state of health of deceased soldiers' mothers (who have a husband working) and the extent of disablement, if any, are no slight task.

The life of the practitioner who keeps rigidly to the rules for certification under the Insurance Act is one series of troubles and arguments and explanations.

Hardly ever can a day go by without a practitioner who is conscientious refusing certificates of one sort or another, and the refusal leads in every case to much unpleasantness, and this does not allow ease of mind for the doctor, in spite of the fact that he knows that he is taking the honourable course.

Every day brings its new worry in some form or another.—I am, etc.,

December 5th. ANXIOUS.

PRACTICES OF MEN ON ACTIVE SERVICE.

SIR,—May I be allowed to give an example of how a doctor on service may obtain a share of the private fees paid by his patients to another doctor during his absence?

A friend of mine became aware that one of his patients had been so attended. He immediately claimed a "statement of account" and half fees, basing his claim upon two essential points: (1) That if he had been at home he would have been called upon to attend; and (2) that the claim was sustained by the existing "custom" of the profession.

After some correspondence with the solicitors for the doctor in question, an "account" was given, and half of the fees paid.

May I suggest that this is a practical method whereby every private practitioner now on service may safeguard himself, to some extent at least. Let the practitioner ascertain, by the best means available, those of his private patients who have been medically attended during his absence, and claim as indicated.

Refusals to recognize claims of this nature may provide means of testing the effective value of the action foreshadowed by the General Medical Council in regard to practitioners "scooping" the fees of absentee doctors, but, apart from this, I feel sure that these claims can be enforced at law.—I am, etc.,

December 4th. MEMBER OF COUNCIL.

FEES OF PHYSICIANS AND SURGEONS.

SIR,—Sir Ronald Ross has opened up a perennial sore in inviting discussion on the fees of physicians and surgeons. There is no part of the human economy so sensitive as the pocket; however, I hope the sore can be treated without leaving any irritation in the minds of those afflicted. The question raised by the Science Guild is not one of raising physicians' fees, but of lowering those charged by surgeons so as to bring the cost of any operation within the reasonable limit of an army officer's income.

Shortly before the war an insurance scheme—not by any means on the principle of the National Insurance Act—for the benefit of officers' families was proposed, but there was a fear in the minds of many that the surgeons' fees would wreck any scheme.

Lady Mackinnon, like Lady Henry and Sir Lauder Brunton, took a great interest in this proposal, and she invited me to attend a meeting of the officers and their wives in this district.

I offered to join her advisory committee on the understanding that any work which I did would be purely honorary. I was strongly against fixing any scale of fees for particular operations, as such a scheme could only tend to establish a panel of cheap consultants and operators which was certainly not desirable.

I assured her that there was no danger to the scheme in this district, as the surgeons of Liverpool are not vampires, who would suck the last drop of an officer's blood, and I felt confident that any operation could be done for a very reasonable fee, or even for nothing in a meritorious case. I highly approved of surgeons charging as large fees as they could get from those able to pay, but surgeons do a large amount of work for nothing, and are just as sympathetic as any other class of the community with officers' families. Owing to the war the scheme never matured, and it is rather premature to say what will happen after the war. Perhaps then a niggardly State will give officers a living wage.

The discussion has taken a side turn away from the original text, and I now wish to make a few observations on the humorous aspect presented. We have an animated discussion on the relative merits or demerits of physicians and surgeons and the planes which they should occupy. It seems to have escaped the attention of the disputants that the public nowadays do not consult physicians and surgeons, but specialists and surgical specialists, and we are all specialists of one kind or another, general or otherwise. It is only the man who handles the knife who can put the fear of God or of the devil into the minds of patients and their friends, and thus be able to extract a good fee for his services. The surgeons wisely do not charge by results, and thus they back a dead certainty. On the other hand, the physician specialists have much keen competition, as at 40 every man is supposed to be a fool or a physician—every medical man claims to be a physician; even the surgeons, with few exceptions, practise medicine between their operations, and I suppose the patients are the fools. We know the old proverb that fools and their money are easily parted. The public often look upon the physician as the last chance to save them from the knife.

On the other hand, the general practitioner, often impressed with the glamour of a successful operation, rushes the patient off to the surgeon without running the risk of an intermediary, who might possibly differ from his opinion. We very seldom hear of a surgeon calling in a physician, but he does very often make use of the radiologist, and occasionally of the bacteriologist, to assist in his diagnostic capacity. Dr. Thurstan Holland has given the surgeon a good lift up, but the surgeon who attempted to remove a calculus from the pelvis of the kidney before the radiologist said that such was present would fall very low in his estimation. Dr. Holland has a very high opinion of his art, and deservedly so; but, in order to maintain his art on a very high plane, he insists that no man can interpret a radiogram of any part of the body except a medical radiologist. Why? All medical radiologists are not scientists, and have often a very poor knowledge of physics, whereas a physicist could easily obtain a knowledge of all that is required of human anatomy or even pathology. It was formerly held that physiology, which in my opinion stands on a higher plane than either medicine or surgery, must be taught by a medical man; these days have changed. The radiologist and the surgeon may occasionally prowl about in the dark. Dr. Holland has recently told of a huge gash over the heart of a patient, on his way back from the front, made in search of a bullet displayed in a radiogram, which bullet was afterwards found deeply imbedded in the muscles of the back. This considerably exceeded Dr. Mercier's one-sixteenth of an inch. An ophthalmic surgeon who may have a very poor knowledge

of the science of optics is very apt to jump on the mere optician. Some of these gentlemen will give you a learned disquisition on acquired myopia, oblivious of the hereditary nature of this affection. Physicians, surgeons, general practitioners, and all kinds of specialists may occupy the same or different planes, but there is a higher plane to which, as Emerson said, we are all invited to ascend. There are many specialities not overpaid, and some well paid, and as a rule the least scientific are financially the strongest. The *intellectuels* should occupy the highest plane, if not in this world, then perhaps in the next.

You cannot raise physicians' fees by lowering those of the surgeons. There is no law in this country, except the inexorable law of supply and demand, to prevent any physician, if he so desire, from fixing his fee for his advice in his own consulting room at one hundred guineas, always provided that he is not on the panel, but I am afraid that his sanity might be called in question, and he might be relegated to the care of Dr. Mercier.

I am convinced that many physicians, without making themselves ridiculous, could easily double their fees, especially those who are physicians to the King or even to dukes and other notabilities. They could treat the notabilities for the advertisement. A man like Dr. Mercier who holds a pre-eminent position in the mental world—I shall not say a world of lunacy for fear of being misunderstood—has no justification for charging a miserable fee. He should demand such a fee as would *mark* the value of his advice.

Why should physicians trouble about their fees? According to the Royal College of Physicians, a fee is a mere honorarium, and no recompense for the superlative value of the advice tendered but not always swallowed. Why should this mere honorarium be fixed at one to three guineas for a consultation in the physician's house, with an addition of 14s. a mile for distance? Distance lends enchantment to the view, and enormously enhances the value of the consultation—to the physician. I suppose if a patient offered an honorarium, consisting of a few of the smallest coins of the realm neatly folded up and enclosed in an envelope, to the President or Censors of the College, it would be considered beneath their dignity to examine the contents of the envelope, at least not till the patient had departed—not from this life, but from the physician's consulting room.

It is about time that physicians stopped this absurd twaddle about honorariums, and, like the surgeons and some specialists, put their fees on a somewhat more sensible footing. The cynic might say, if the advice of both physicians and surgeons were always paid for on its intrinsic merits, it might be often recompensed by a very small coin. It is up to physicians and surgeons to put a market value on their work, and the public can take it or leave it as they think fit.

If the physicians' fees are too low, what about the unfortunate panel practitioner, who contracts to attend insured persons by the thousand for 365 days at a rate per head ranging from 5s. 8½d. to 7s., without the accrued interest for the sums remaining unpaid for a year or two? Of course he has a chance of a "floating sixpence," but that has usually sunk to the bottom of the stock mixture before he can lay hold of it. He certainly only gets an honorarium, and, if he do honest work, he earns his bread by the sweat of his brow. He used to get a guinea when he met a consultant, but now the consultation and also a report on the patient are going to be included in the 7s., according to an agreement arranged between the Insurance Commissioners and the Insurance Acts Committee of the British Medical Association. The unfortunate dupe is told by the latter body to keep his mouth shut for fear his honorarium be reduced. A chiropodist would not contract to cut your toe-nails for less than two guineas a year, and if you happened to die at the end of the first month, he would want his two guineas, and not 31/365ths of his capitation fee.

If it be seriously intended to lessen the surgeon's income, the best way to do it is not to employ him, but the surgeon well knows that competition is not over-keen, and in the present state of medical knowledge his handicraft is not in danger. A celebrated surgeon once said to me, "There is always room at the top." The surgeon flourishes on the failures of general practitioners, and to a less extent on those of physicians. The following diseases, out of which the surgeons reap a rich harvest, are to a large extent preventable: Post-nasal adenoids, gastric and duodenal ulcers, appendicitis, colitis, intestinal stasis, to a considerable extent malignant disease of the various flexures of the colon due, as Metchnikoff pointed out, to stagnation; biliary and renal calculi, mastitis and enlarged prostate. These diseases are medical in their initial stages, and I could give an equally long list of preventable diseases which remain medical to the finish. Although the general practitioners and physicians are ignominiously paid, they should not grudge the surgeon a liberal honorarium for wiping out or burying their mistakes. The late King Edward said: "If preventable, why not prevented?" Ah! there is the rub, and a hard nut for the *Health* Insurance Commissioners to crack. The only funny thing about the National Health Insurance Act is its name, as it is more closely related to a London fog than to any question of health; the only redeeming feature in the whole Act is the research work, and there is only spent on this the miserable sum of some £50,000 out of 25 to 30 millions sterling.

The preservation of health does not seem to be a paying game. My friend Ronald Ross has done more than any other man for the health of the tropics, and I would candidly ask him, Has he found it pay? Would he not have been financially better off trifling with the health of the nation as a National Health Insurance Commissioner? He has, however, something better than money—the high moral satifaction of work well done; and he may be, like Butler, "When turned to dust, presented with a monumental bust." When will the Legislature rise to a sense of its duty, scrap all this cheap physic, and devote some attention to questions of health?—I am, etc.,

Liverpool, Nov. 30th. JAMES BARR.

SIR,—If any practical issue is to result from the interesting discussion raised by the late Sir Lauder Brunton's letter, published by Sir Ronald Ross, we must, I think, try and get a little more down to root principles. Should we not first define the services for which physicians and surgeons receive remuneration, before we endeavour to decide whether the remuneration is adequate or properly proportioned?

The services rendered by a surgeon which are comparable with those rendered by a physician are the investigation of the patient's condition, and the giving of advice as to the treatment to be adopted. There is no service rendered by a physician which is at all comparable with the performance of a surgical operation.

This being so, it seems to me that the question which really wants consideration is whether the remuneration which the medical profession receives for its advisory services and for its operative services respectively is properly distributed. Just as in general practice medical men have allowed the public to regard their chief service as the giving of medicine or the writing of a prescription, so have surgeons allowed the performance of their operations altogether to overshadow their equally responsible service of accurate diagnosis and sound advice as to the course that should be adopted. When one contrasts the size of a first-class surgeon's fees for the preliminary consultation and for the subsequent laparotomy one is almost reminded of the notices one sees put up by advertising dentists, "Advice gratis." A properly remunerative fee for the surgeon's examination and advice, even when such advice consists in recommending the patient to seek the help of a physician, would undoubtedly increase public confidence in its value. Such a fee should tend to remove the view apparently held by some of your medical correspondents that the surgeon is the servant of the physician. It would inevitably lead to a corresponding increase in the fee of the physician for his examination and advice. It might, advantageously I think, lead to a reduction in the fees charged for some surgical operations.

But if an attempt is to be made by concerted action to provide proper remuneration for both surgeons and physicians for their services in investigating difficult cases and advising thereon, some steps must also be taken to standardize the work for which these larger fees are to be charged. A fee which is a reasonable reward for the serious responsibility involved in the thorough examination of a difficult case and in the giving of a reasoned judgement thereon, can hardly be regarded as otherwise than

excessive for the investigation of any trivial ailment that an anxious or wealthy patient may be disposed to submit to a consultant. The securing of proper remuneration of physicians or surgeons for their advice in complicated cases seems almost necessarily to entail their refusal to allow the public unrestricted access to their consulting rooms. It will be necessary for us to take a leaf out of the book of the lawyers' professional regulations, and require the public to approach specialists and consultants only through the general practitioner, just as they approach barristers through solicitors. With this restriction it should be quite possible to arrange that fees should not only be sufficient to reward adequately physicians and surgeons for their advice, but also on the advice of the general practitioner to increase the fee above the average when the complexity of the case or the special reputation of the consultant made such increase reasonable. It would enable us to meet the difficulties which are daily growing in consequence of the multitude of specialisms in the profession, which are inevitable with the increase of knowledge. A step in professional organization of this character would be an appropriate plank in the programme of our after-war reconstruction of medicine.—I am, etc.,

London, N.W., Nov. 28th. LAURISTON E. SHAW.

SIR,—The question of physicians' and surgeons' fees is part of the larger one of remuneration in general. It is difficult to dogmatize on what constitutes legitimate pecuniary reward for service. Theoretically it ought, I suppose, to be proportionate to the labour and skill involved in the service; and such is to a large extent the case—the skilled artisan earns more than the unskilled labourer, the lawyer than the skilled artisan, the brilliant barrister than the dull one, etc. Nevertheless, the money given for service by no means always represents its real as distinguished from its market value. It is estimated that Shakespeare received at the most £12 for writing a play. To-day the value of the mere paper on which one of them, say *Hamlet*, was written would be priceless, and its discovery would send a thrill throughout the civilized world. Rembrandt died in poverty, his very existence having been forgotten by his compatriots, and we are told by one of his relatives that a generation after his death a portrait by him could have been purchased for sixpence! Herbert Spencer earned so little by his writings that, but for an admirer on the other side of the Atlantic, he could not have continued his work. Darwin, fortunately, had independent means, or he could not have carried on his great work unhampered, so small was its market value. Had he fallen into poverty, Government would, perhaps, have granted him a small annuity. A Ronald Ross makes a great discovery, the real value of which simply cannot be estimated in terms of money, and has to be content with the consciousness of the fact.

It is clear, therefore, that there is often a wide disparity between the real and the market value of service. Instances of this disparity abound. Some callings are more lucrative than others involving at least an equal degree of skill and labour. The butcher earns more than the greengrocer, the hosier than the hairdresser, the stockbroker than the soldier, and (coming to our own profession) the surgeon more than the physician.

If we probe the matter further we meet with yet stranger disparities. Thus, while Charlie Chaplin is said to be earning upwards of £100,000 a year, a Smith's prizeman of my acquaintance is barely able to secure a thousandth part of this sum. It takes several years to learn to be a carpenter, and his normal wage is at the rate of about one shilling an hour, while a young woman, after a three months' course of massage, can command her five to ten shillings an hour. A peasant, working from sunrise to sunset in producing the one form of wealth we cannot do without, gets three shillings a day (if as much), while a man who is "something in the city" will make his hundreds over a single deal.

I leave others to explain these incongruities. The practical fact to be borne in mind is that every one secures—and rightly so—as much as he can for his work, and the surgeon is no exception to the rule. He is able to command higher fees than the physician. Nor has the latter any serious ground for complaint. When the medical student decides to become a physician rather than a surgeon he does so with the full knowledge that it is a less lucrative branch of the profession.—I am, etc.,

London, W., Dec. 3rd. HARRY CAMPBELL.

SIR,—The discussion on the relative fees paid to specialists is interesting, but there must be many general practitioners like myself—physicians, surgeons, accoucheurs, and anaesthetists complete—who are wondering where they come in. I syringe out ears and do radical mastoids; I remove nasal polypi, adenoids, and tonsils; I do refractions; I remove teeth, giving my own gas or ether; I attend all infectious diseases, and do tracheotomy when necessary—the last one with the mother the sole assistant holding the solitary and shaking candle. I am a public vaccinator and the parish doctor. Paracentesis thoracis and abdominis are amongst my accomplishments. I operate on perforated gastric ulcers, appendices, and all abdominal emergencies. "A strangulated hernia; please bring everything," takes me ten miles out in the middle of the night to operate on the case in a feather bed with a lamp and two candles as illumination. A pancreatic cyst, a uterus full of fibroids wedged in the pelvis, twisted ovarians, and prostatectomy are among my successes. Every conceivable obstetric emergency comes our way; we give our own chloroform and perform Caesarean section when occasion requires it. And in my spare time I delve into the mysteries of incurable diseases.

Last, but not least, I have 1,500 insured persons under my care, with the unnecessary waste of time their coughs and colds and certificates take from more serious work.

Only recently I spotted two cases of typhoid, in one of which I took the Widal reaction in my surgery, and thus, I suppose, performed some considerable public service, as no more cases have developed; one was a panel patient who, by the way, had not had her medical card signed, the other a parish patient; thus, for this public service, for the taking of two Widals and for the two notifications, I receive 2s., less 4d. for stamps.

I agree I am an adjective fool to do it, and I will take good care my sons do not; but there are dozens like me.

But, to return to the 100-guinea argument, what fees would the specialists ask for doing my job for a year?

I enclose my card, but as the almighty Ego is somewhat pronounced throughout the letter, let me sign myself, yours, etc.,

December 4th. A PANEL DOCTOR.

FROG-SKIN GRAFTING.

SIR,—With reference to Captain Kendall's article on frog-skin grafting, in your issue of November 11th, may I be allowed to mention that this procedure was, I believe, initiated by myself when serving in India in the year 1884? On the principle "fiat experimentum," my first patient was my own *corpus vile*. I had for a long time suffered from an intractable ulceration (tropical ulcer) of the dorsum of the foot which had resisted all forms of treatment, including change to England, and I was beginning to despair of ever obtaining a cure. One day the Ressaldar Major of my regiment (5th Bengal Cavalry) suggested quite solemnly that I should try cutting a frog in half and applying it to the ulcerated surface, as he had known marvellous cures of ulcer effected by that means. I decided to accept his suggestion in so far as it commended itself to my judgement, and procured a frog, or rather several frogs, which I kept for a week in a *ghurra* of boric lotion, and then used as sources of the grafts for my foot. The surface of the ulcer was in a sufficiently healthy state for grafting, and, to make a long story short, it was only about four or five weeks, so far as my memory serves, before the whole surface was covered with sound and supple skin. To-day, thirty-two years later, it is impossible, save by the closest scrutiny, to discover the new skin. There is not the faintest trace of pigmentation, no contraction of the cicatrix; the skin is practically indistinguishable from the original skin, and has stood the stress of thirty-two years' active wear and tear.

So far as I can recollect, a full description of the skin grafting technique followed by me was published in the *Indian Medical Gazette* of the year 1885 or 1886, when I had used it in a very large number of cases without, so

far as I can remember, a single failure. The procedure was also circulated by the then Surgeon-General for the information and guidance of all medical officers.

I must, however, state that when I first came home from India in 1905 frog-skin grafting by my method (which is that now described by Captain Kendall) was given a trial at the Radcliffe Infirmary in Oxford by one of the surgeons, Lieutenant-Colonel Dodds-Parker, now senior surgeon of the 3rd Southern General Hospital, which I have the honour to command. It proved a complete failure. In my opinion this failure resulted from the epidermal cells of the British frog failing to accommodate themselves to the normal body temperature of the human being. In this view the late Professor Jenkinson of this university concurred, and he made experiments to endeavour to acclimatize tadpoles to the abnormally high temperature, but without success.

It is encouraging to learn that Captain Kendall has met with success in his frog skin in France, in view of the failure with English frogs above mentioned.—I am, etc.,

GEORGE RANKING,
Lieut.-Col. I.M.S.(Ret.), R.A.M.C.(T.F.),
Adm. 3rd S. G. Hospital.

Oxford, Nov. 11th.

THE USE OF TURPENTINE IN SURGERY.

SIR,—There is no doubt as to the great value of turpentine in both medicine and surgery, notably in the control of bleeding from various parts of the body, and I am not surprised to find that Captain Moore, R.A.M.C. (November 25th, p. 744), has found it useful in secondary haemorrhage.

I wish to suggest a mixture which, while being probably quite as effective for the purpose named, will cause less suffering—namely, equal parts of acid. carbolic. liquefact., liq. ferri perchloridi, and oleum terebinthinae.—I am, etc.,

Middlesbrough, Nov. 28th. J. WATKIN EDWARDS.

THE DIAGNOSIS OF PHTHISIS.

SIR,—There has been no more popular pastime during the last year than the discrediting of the panel practitioner. Especially has he been pointed at as the cause of the high mortality in phthisis pulmonalis. It has been suggested that he should be deprived of his tuberculosis sixpence. I am speaking about the industrial areas of Lancashire. The tuberculosis officers are beginning to realize that they cannot cure phthisis under present conditions. I have yet to meet the medical man who can honestly say that he has seen an undoubted case of pulmonary phthisis cured. Temporary improvement seems to be the limit at present.

The cry was, Give us early cases and we can cure them in the sanatoriums. What is an early case? It is now beginning to be suggested that a case is beyond cure if tubercle bacilli are found in the sputum. It looks as if the cases would have to be so early that there would be considerable doubt about the diagnosis. If the cases are obtained sufficiently early, the statistics from sanatoriums will undoubtedly improve. At the present time these must be somewhat unreliable, and likely to mislead the public as to the value of sanatorium treatment. The undoubted cases always relapse and die, under present conditions. The last letter I received from my tuberculosis expert reads:

"This is an interesting case of phthisis and perhaps you will kindly notify it. She has steadily lost weight since I first saw her." (About four weeks.) "Although she appears to have no evening rise of temperature and her sputum is negative, I find signs of catarrh in the upper part of the right lower lobe, below the scapula." (These are expiratory râles, which earlier on were general all over the chest.) "I am assisting her to apply for sanatorium benefit."

What are the earliest indubitable signs of pulmonary phthisis which would entitle the panel practitioner to notify a case as tuberculosis, and so subject the patient to all the consequent disabilities?

The more experience I have of the war against tuberculosis the more confirmed I am that the greatest benefit will accrue to the community (1) from the segregation in country colonies of tuberculous persons with tubercle bacilli in their sputa; (2) from, suitably situated, sanatoriums for suspected cases; (3) from reform of our homes and workshops.—I am, etc.,

Wigan, Dec. 3rd. FERDINAND REES.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

SIR,—The Council of the Royal College of Surgeons consists of a few Fellows (engaged in consulting practice) elected solely by other Fellows. The Council, therefore, does not represent the surgical profession. The Members, who represent over 70 per cent. of the members, and who provide over 70 per cent of the payments to the College, are wholly unrepresented.

The Council has spent public funds entrusted to it in publishing an *ex parte* statement by the President, supported by an anonymous letter, explaining its indefensible position, but refuses to publish the full facts of the case.

The Council of the College is now called to deal with grave public problems including venereal diseases, maternity mortality, war certificates, broken soldiers. With such subjects the present Council of academic surgeons is unfitted to deal.

It is urgently necessary that representatives of the Members of the College engaged in human practice should be elected on to the Council, and infuse new blood into an inert and anaemic body.

We must win our war by organizing the surgical profession as well as every other branch of human energy.—I am, etc.,

JOSIAH OLDFIELD,
London, E.C., Dec. 4th. Lieutenant-Colonel.

*** We have also received a letter from Dr. J. Brindley James, President of the Society of Members, protesting against what he describes as the arbitrary action of the President, who, because there were only three persons short of a quorum, declared that the meeting could not be held, although while he was speaking enough persons entered to make more than the number said to be required.

Obituary.

RICHARD NORRIS, M.D., F.R.S.EDIN., ETC.,

FORMERLY PROFESSOR OF PHYSIOLOGY, QUEEN'S COLLEGE, BIRMINGHAM.

By the death of Dr. Norris at his residence, "The Laboratory," Yardley, in the 86th year of his age, Birmingham has lost one of the most eminent of the older generation of its practitioners. Apparently in his usual good health a few hours previously, he collapsed from heart failure in the early hours of November 15th.

During the Fifties of the past century and while a medical student of Queen's College, Birmingham, he made his first important discovery—the photographic dry plate. The invention, which was an immediate success, is one of the foundations of the art of to-day and a main cause of its popularity among amateurs and its application to the moving picture.

He took the diploma of M.R.C.S.Eng. in 1860 and, two years later, made his first contribution to the Royal Society of London: "Phenomena of attraction and adhesion in solid bodies, films, vesicles, liquids, globules and blood corpuscles"; this paper was published in the *Proceedings*. In the same year he graduated M.D. St. Andrews, and shortly afterwards was appointed professor of physiology in his old medical school, a position he continued to hold until the absorption of Queen's College by the Mason College, now the Medical Faculty of the University of Birmingham. As a teacher he commanded admiration, for he possessed great personal charm, spoke with authority, and was a brilliant demonstrator. During the next few years he contributed several papers which were published in the *Proceedings* of the Royal Society, chiefly on physiological subjects, with, however, one on "Certain molecular changes in iron and steel during separate acts of heating and cooling," which dealt with some details he was the first to point out.

At the meeting of the British Association in 1865 he read a paper demonstrating that the opinion then held that muscular contraction caused rigor mortis was fallacious, and he received a grant from that association which allowed him to submit the result of further researches to the next meeting.

But what, up to the day of his death, he regarded as his chief work was the discovery in 1877 of large numbers

of "invisible corpuscles" in the blood. His first communication on this subject was made to the Birmingham Philosophical Society, and for some years his statements attracted the attention of the profession in this country and on the Continent. In 1882 Professor Bizzozero of Turin claimed to have seen similar corpuscles, but Dr. Norris easily established priority. He maintained that these corpuscles were invisible in that they possessed the same refractive index as the liquor sanguinis, that they enuorized into red corpuscles, and that when blood coagulated they broke down into fibrin. He dealt with the matter exhaustively in the special volume he published, and illustrated his claims by a series of about 200 of very fine microphotographs. Later his contentions were challenged, but he maintained his own views.

During the last sixteen years he lived in retirement, up to the last, however, interesting himself in the work he loved so well. He leaves a family of two sons (both practitioners) and three daughters.

DR. GEORGE THOMAS WOODS, L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glasg., died at his residence in Killinghall, Ripley, Yorkshire, on November 5th, of acute pneumonia, to the deep regret of his numerous friends in Ripley, Harrogate, Bilton, and Killinghall, the more so as it was known that at the same time his wife was prostrated by a very severe illness. The son of Mr. George Woods of Harrogate, Dr. G. T. Woods was educated at Wesley College, Sheffield, and studied medicine at Leeds and the University of Edinburgh. All his diplomas were awarded to him in 1885. He was a member of the British Medical Association, and long practised in Harrogate and the district. He was medical officer to the Harrogate and Knaresborough Joint Isolation Hospital and Ripley district, and medical officer for the Knaresborough Union. He officiated for twenty years as honorary organist at St. Thomas's Church, Killinghall, where he was interred on November 12th, the funeral being largely attended.

M. ALFRED NAQUET, who died recently at the age of 82, was long a conspicuous figure in the French political world. He took the degree of Doctor of Medicine at the Paris Faculty in 1859 and became *agrégé* in 1863. In the same year he accepted an invitation to the chair of chemistry in the Technical Institute of Palermo, which he held for two years. He was an ardent republican, and in 1867 was prosecuted for alleged membership of a secret society and sentenced to fifteen months' imprisonment and forfeiture of civil rights for five years. This involved the loss of his appointment as *agrége*. Condemned again in 1869 for a book entitled *Religion, propriété, famille*, he took refuge in Spain, where he took part in an insurrection in Andalusia. He returned to France in 1870, and in the following year was elected to the Chamber of Deputies as representative of Vaucluse and took his seat on the extreme left. It was mainly owing to the persevering efforts of M. Naquet that in 1882 divorce was legalized in France. In 1883 he was elected to the Senate. He was one of the leaders of the Boulanger movement. After its failure he retired from active political life. M. Naquet was a distinguished chemist. Besides theses on the application of chemical analysis to toxicology and on allotropism and isomerism, he was the author of a book on the principles of chemistry, which went through several editions. He was also one of the most brilliant journalists in the French Parliament.

THE death is announced of Mr. WILLIAM BOYD MOSS, F.R.C.S., in his 88th year. He took the diplomas of M.R.C.S. and L.S.A. in 1853, so that he had been a member of the profession for sixty-three years, and he was the senior Fellow of the College (F.R.C.S., 1856) excepting Mr. Barwell (F.R.C.S., 1852). He had spent nearly thirty years in retirement, and died in Chiswick on November 17th. His remains were cremated at Woking on November 21st.

DR. H. W. G. LANDER of Hathersage, Derbyshire, was the youngest son of the Rev. John Lander, for forty-five years Rector of Donnington, Herefordshire, and was born on March 9th, 1868, and his career has been brought to a close at the early age of 48 years by an accident which rapidly proved fatal. He graduated M.B., C.M. in the University of Edinburgh in 1894; he was greatly liked by his fellow students owing to his genial, frank, straightforward manner. He was a keen sportsman, and as a "sprinter" used to excel in the quarter-mile and 100 yards race. In spite of his many duties he always found time to take an interest in local sports, and would even give a helping hand in time of need. About nineteen years ago Dr. Lander took over the practice at Hathersage from Dr. Taylor. It was a very extensive one, embracing Grindleford, Hathersage, Eyam, Bamford, and surrounding districts. Over and above his medical work he found time to interest himself in public matters, being a member of the parish council and acting as president of many local committees—in short, he had at heart the welfare of those among whom he lived. The war brought further work upon him, for he became medical officer of the local Red Cross Hospital. It was while on his way to lecture to the ladies' ambulance class (after being at the sick bed of a little child) that the sad accident occurred. His loss is keenly felt, and his popularity in the district was shown by the crowd which attended his funeral.

DR. NORMAN GUNN, who died at Dufftown, Banffshire, on November 19th, at the age of 43, was the only son of the late Rev. Angus Gunn, D.D., of Dollar. He studied at the University of Edinburgh, where he graduated M.B., C.M. in 1896. Nearly twenty years ago he settled in Dufftown, where he carried on a large and scattered practice, gaining the confidence of the people among whom he worked by his sympathy and devotion to duty. Some ten years ago he was attacked by paralysis, but in spite of increasing physical infirmity he continued for five years longer to do his work as the only doctor in a district where the conditions entailed much exposure in the winter months. For the past year he had been practically confined to his bed, but his intellect remained unimpaired till within a few hours of his death. He is survived by a widow and a young family of two sons and one daughter.

LIEUTENANT-COLONEL EDGAR A. MEARNS, of the Medical Service of the United States Army, who died on November 3rd, aged 59, graduated at the New York College of Physicians and Surgeons in 1881. He served in the army from 1883 till 1909, when he retired on account of physical disability. He was the author of more than one hundred and twenty reports and memoirs on subjects connected with natural history. He made two journeys to South Africa, one in 1909–10 as the representative of the Smithsonian Institution on the Roosevelt expedition; the second a year later with the Childs-Frick expedition. One-tenth of the collection of birds in the Smithsonian Institution was the fruit of his efforts.

COLONEL ERNEST HAROLD FENN, C.I.E., A.M.S. (retired), died at Hagley, Worcestershire, on November 24th, aged 66. He was born on February 16th, 1850, the son of Mr. T. H. Fenn of Nayland, Colchester, was educated at Sherborne and at Middlesex Hospital, and took the diploma of M.R.C.S. in 1872 and that of L.R.C.P.Edin. in 1873. He entered the army as surgeon on September 30th, 1875, and shortly afterwards served in the Afghan war of 1878–80, when he took part in Roberts's march from Kabul to Kandahar and the battle of Kandahar, was mentioned in dispatches, and received the medal with a clasp and the Kabul-Kandahar bronze star. In 1881 he joined the Grenadier Guards, and served with them in the Sudan in 1885, at Suakin, and in the action of Hashin, receiving the medal with clasp and the Khedive's bronze star. From 1888 to 1894 he served on the staff of Lord Lansdowne, then Governor-General of India, and accompanied Sir Mortimer Durand on his mission to Kabul in 1893, for which he received the thanks of the Government of India and the C.I.E. From 1888 to 1903 he served on the staff of Lord Curzon, Viceroy of India, when he was present at the Delhi Durbar of 1902, and received the Durbar medal. On August 16th, 1903, he was promoted to full colonel, and on February 16th, 1907, he retired.

ROYAL MEDICAL BENEVOLENT FUND.

THE following is a continuation of the summary of cases relieved by the Committee at its meeting on November 14th:

Widow, aged 78, of M.R.C.S.Eng. who practised at Holderness and died in 1896. Left with a large family and only £30 per annum. With the exception of two daughters, who help at home, the other children are married and unable to help. Tries to supplement income by taking in lodgers. Relieved six times, £72. Voted £12 in twelve instalments.

Daughter, aged 64, of M.D.Lond. who practised in London and died in 1887. Applicant is blind and her only income is a pension from a society for the blind. Relieved four times, £42. Voted £12 in twelve instalments.

Daughter, aged 65, of F.R.C.S.Eng. who practised at Chester and died in 1884. Applicant left without means, and has endeavoured to earn a living as housekeeper, but, owing to age, cannot obtain a post. Relieved five times, £32. Voted £10 in two instalments.

Widow, aged 46, of L.R.C.P.Edin. who practised in Fifeshire and died in 1913. Applicant was left without means with six children, two of whom are still at school, and the only one able to help earns £70 per year, which is the only source of income. Applicant has recently been very ill, and with the increased cost of living has got into difficulties. Relieved once, three years ago, £10. Voted £20.

Daughters, ages 64 and 56, of M.R.C.S.Eng. who practised in Cornwall and died in 1873. Only property left them the house in which they live, and they try to make a living by receiving paying guests, but recently not successfully. Relieved seven times, £118. Voted £18 in twelve instalments.

Widow, aged 53, of M.D.Edin. who practised at Newcastle and died in 1896. Applicant was left entirely without means with one young daughter. Up to about two years ago, when she fractured her leg, managed to make a living as nurse companion, but cannot undertake any work now, and is dependent on her daughter, now married and only able to help a little. Relieved twice, £24. Voted £12 in twelve instalments.

Daughter, aged 57, of M.D.Lond. who practised at St. Pancras and died in 1868. Applicant and her mother were left entirely unprovided for, and since her mother's death earned her own living as nurse companion, but, owing to ill health and age, unable to obtain suitable work. Voted £6 in six instalments.

Widow, aged 66, of L.R.C.P.Irel. who practised in Essex and died in 1896. Since the death of her husband has earned a living by acting as cook. Recently had a serious operation which prevents her from working. Only income a small pension from another society. Relieved five times, £42. Voted £12 in twelve instalments.

Daughter, aged 48, of M.R.C.S.Eng. who practised in Bombay and died in 1873. Applicant endeavours to earn a living by nursing but finds it impossible to make sufficient to keep herself. Relieved five times, £64. Voted £12 in twelve instalments.

It was reported that four annuitants had died since the previous meeting, one of whom had received £500, another £480. The vacancies were filled up.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, at 11, Chandos Street, Cavendish Square, London, W.

The Royal Medical Benevolent Fund Guild is now called upon, as a result of the war, to deal with many widows and children who, in happier times, would not have thought of asking for assistance. It is glad to receive secondhand clothing and household linen. The class of clothes most wanted is that suitable for boys and girls working in offices, for women, and for old men. The gifts should be sent to the secretary of the Guild, 43, Bolsover Street, W.

Universities and Colleges.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

THE following committees of the Senate have elected their respective chairmen as follows:—Brown Animal Sanatory Institution Committee: Sir Rickman J. Godlee, K.C.V.O.; Honorary (War) Degrees Board: The Vice-Chancellor, Sir Alfred Pearce Gould, K.C.V.O.; Committee of Members of the Senate: Dr. Frederick Taylor; Physiological Laboratory Committee: Sir David Ferrier, F.R.S.

The Rogers Prize of £100 for 1916 has been awarded to Dr. J. L. Jona, D.Sc.Adel., M.D., B.S.Melb., for an essay on the nature of pyrexia and its relation to micro-organisms.

SOCIETY OF APOTHECARIES OF LONDON.

THE diploma of the society has been granted to Messrs. L. Baumgarten and P. C. C. Fenwick.

The Services.

EXCHANGES.

CAPTAIN R.A.M.C.(T.), recruiting medical board, near London, desires exchange with T.F. officer doing sanitary work or with R.E. unit. Eastern command preferred. Address No. 4800, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Captain R.A.M.C.(T.), Yeomanry Regiment, stationed easy distance from London, seeks transfer with M.O. in base hospital, casualty clearing station, or ambulance train.—Address No. 4798, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

M.O. (Captain), regiment East Coast, wishes to exchange with any Territorial M.O., abroad.—Address No. 4799, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Medical News.

WE are informed that Sir James Mackenzie withdrew from the Final Medical Appeal Board a month ago.

AT the meeting of the Medical Society of London on Monday next at 8.30 p.m. demonstrations illustrating the principles of the re-education of the wounded will be given by Mr. Arnold Lawson (the blind), Mr. Derwent Wood (facial restoration), Dr. J. B. Mennell (walking), and Mr. McMahon, instructor of speech defects at St. Bartholomew's Hospital (shell-shock, stammering and other affections of the voice and speech).

CHRISTMAS lectures to juvenile audiences at the Royal Institution of Great Britain were instituted by Michael Faraday in 1826. The ninety-first course will be given by Professor Arthur Keith, F.R.S., on December 28th, 30th, January 2nd, 4th, 6th, and 9th, at 3 o'clock on each day. His subject is "The human machine which all must work." At a later date Professor C. S. Sherrington, F.R.S., will give six lectures on the old brain and the new brain and their meaning, and on pain and its nervous basis. The first Friday evening discourse will be given on January 19th, when Professor Sir James Dewar will lecture on soap bubbles of long duration.

A COURSE of lectures and demonstrations in hospital administration for the D.P.H. will be given by Dr. E. W. Goodall at the North-Western Hospital, Hampstead, on Tuesdays and Fridays, beginning January 2nd, 1917. The fee for the course is £3 3s., which should be paid to the Metropolitan Asylums Board, Embankment, E.C., from whom further information can be obtained.

SIR RICHARD TEMPLE, Chairman of the Edith Cavell Homes of Rest for Nurses (25, Victoria Street, Westminster), informs us that a number of contributions have been received from officers and men in both services, who, in sending them, have expressed their cordial sympathy with the scheme. Its object is the establishment, in memory of Nurse Edith Cavell, of a home or homes of temporary rest for practising trained women nurses and probationers who are or have been employed in civil or military hospitals, or in connexion with war, or in any other capacity, and have become temporarily in need of mental or physical rest. The appeal is signed by, among others, Lady Haig, Lady Jellicoe, Viscount French, Lord Beresford, and Sir William Robertson, all of whom are serving on the council.

ABDULLA AND CO., cigarette makers, have issued again this year a tablet wall almanac (for 1917) with illustrations. Among the artists whose drawings are reproduced in colours are representatives of Italy, Japan, Portugal, and Russia, as well as of this country and of Australia. Twenty thousand copies have been prepared for sale at the price of 1s. 4d. each, out of which 1s. will be paid to the funds of the British Red Cross Society.

A RECENT report of the United States Public Health Service states that there are two establishments for lepers in Venezuela. The larger, which is on the Isla de Providencia, just outside the harbour of Maracaibo, has accommodation for 700 patients. It is in charge of a staff of doctors and nurses and is provided with apparatus for the disinfection of clothes and bedding by steam. Lepers are segregated in the several states of Venezuela as they are found and removed later to the Isla de Providencia. The number of lepers interned there at the beginning of 1914 was 400 and 233 were received during the year. During the same period 10 patients were discharged apparently cured. The other establishment at Capo Blanco, about four miles from La Guaira and Maiquetia which formerly accommodated 400 patients was closed, but is now used for the temporary reception of local lepers till they can be transferred to the Isla de Providencia.

ANNA J. JEANES of Philadelphia, a member of the Society of Friends, well known as a philanthropist, died in 1908 leaving estate which now amounts to more than £600,000 to be applied to the treatment of cancerous, nervous, and disabling ailments. Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, Baltimore, who was asked by the trustees of the fund to investigate the work of the Philadelphia hospitals with a view to the most useful employment of the money, has recommended that it be given to the University of Pennsylvania Hospital.

To all lovers of old medical literature a catalogue of "early works on the sciences of medicine and chirurgery" issued by Messrs. Charles J. Sawyer will make a strong appeal. It includes a number of rare and curious old books printed before 1800. Among them we note an English translation of Paul Barbette's *Thesaurus Chirurgiae* with *Medicina Militaris*, "a Body of Military Medicines experimented" by Raymundus Mindererus, and *Cista Militaris* or "a Military Chest furnished for sea and land" by G. F. Hildanus, printed at Amsterdam in 1676; Herman Busschof's treatise on Gout "Englished out of the Dutch by a careful hand" (1676) (it contains an advertisement of moxa, the secret remedy of the "Chineses and Japaneses" described by Sir William Temple in his essay "upon the cure of gout"); the *Mellificium Chirurgiae* of James Cooke of Warwick (1685); Richard Wiseman's *Chirurgical Treatises*, including those on gunshot wounds (third edition, 1697); Cl. Quilletus's *Callipaedia, seu de pulchrae prolis habendae ratione* (1708); Nathaniel Hodges's *Loimologia*, "an historical account of the plague in London in 1665" (third edition, 1771); and John Huxham's *Essay on Fevers* (1750). There are two volumes of manuscript medical and household recipes (seventeenth and eighteenth centuries). Among the pictures is an interesting caricature which may perhaps find a modern application; it is a folio coloured etching published in 1810, and described as "the winding up of the medical report of the Walcheren expedition." There is also a selection of engraved portraits of medical celebrities. It may be added that the Medical Iconographical Society announces the publication, beginning from January, 1917, of a new series of medical portraits from the time of Linacre down to the present century. Particulars may be obtained from Messrs. Charles J. Sawyer, Ltd., publishers to the Society, 23, New Oxford Street, W.C.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

G. S. wishes to consult literature regarding the annual expected progress in height and weight among boys in an industrial home, and statistics of incident sickness.

INCOME TAX.

G. W. inquires whether army pay received as recruiting medical officer is assessable.

*** The pay in question appears to be received for services rendered in connexion with an employment of profit under the Crown, and as such is assessable under Sec. E. The fact that it may be terminated without notice does not affect the existence of liability. We gather that the local surveyor of taxes is dealing with the matter, and if that means that the pay has been assessed locally, the "final appeal" would lie to the local or special commissioners on a question of fact, and to the High Court on a point of law. We advise our correspondent to satisfy himself that no tax is being or will be deducted by the pay agents or paymaster.

ACID DYSPEPSIA.

A MEDICAL MAN, who for the past year has suffered from dyspnoea, heart weakness not due to valvular disease, blueness of hands, and some slight swelling of the fingers in frosty weather, and who finds relief from alkalis, etc., would be glad to know of the best spa to go to be treated, as he is of opinion that the condition is due to acid dyspepsia.

*** The typical simple alkaline spas are Vichy and Vals, but, apart from the difficulties created by the war, the season at both places is from May to September. Any suggestions will be forwarded to the inquirer.

EXTINCT BRITISH SURGICAL INSTRUMENT FIRMS.

SCALPEL wishes to know where he could find information about the dates of the founding and dissolution of instrument-making firms. The curators of several college and medical school museums are interested in this subject. "Savigny" is well known; the firm published a fine illustrated catalogue in 1798, and the excellence of its steel is known even to surgeons now living. "Laundy" was flourishing in 1830. "Stodart" is marked on instruments used by John Hunter, "Robinson, Oxford," on Blizard's lithotomy knives, and "Pepys" and "Evans" on instruments used by Long, Master of the College of Surgeons in 1800. "Boog" seems to have flourished at the beginning of the nineteenth century, and "Botschan" made a large number of David Davis's obstetrical instruments, of which samples are to be seen in several museums; they were made about 1820.

ANSWERS.

POSITION OF FETAL HEAD.

SCOTTISH PRACTITIONER.—The accoucheur's hand is the best instrument we have for assisting the flexion or altering the position of the fetal head. A recent article by Plass (*Johns Hopkins Hosp. Bull.*, xxvii, 164–177, 1916) gives reasons for not interfering with the head in occipito-posterior positions, and pleads for conservative measures.

AUTO-WHEELS.

AUTO writes: In reply to "W." (November 25th, p. 748), I have an auto wheel in use for over twelve months, and find it satisfactory. It does all that is expected of it.

DR. T. REUELL ATKINSON (Chadwell Heath) writes in reply to "W.": I bought an auto-wheel in March, 1914, and had it fitted by a good mechanic to my B.S.A. bicycle. It has done me good service, and I can speak well of it. My speedometer now registers 8,937 miles, and quite half of that mileage has been done since fitting on the auto-wheel. I have worn out two or three tyres, and have required two or more new sparking-plugs. Besides that, there has been very little extra expense—very occasionally I send it to be cleaned. I get about eighty miles to the gallon out of it. It doesn't climb hills well, but is all right on the level. On a hill I assist it by foot-pedalling. Only on two or three occasions have I been held up. I find it quite as reliable as my car, much cheaper to run, and it gives one a little gentle exercise now and then. I found it a good plan when I wanted a new back tyre to my bicycle to have a tandem tyre fitted. I should say it would be very wise for any purchaser to see that the machine only got into the hands of a capable mechanic who knew what he was about. I have heard of auto-wheels being ruined by careless repairs and cheap tinkering.

LETTERS, NOTES, ETC.

A WARNING.

N. B. writes: There are blackmailers, etc., about trying to get misleading medical certificates for rejection purposes. Medical men are advised to be careful in stating how long they have known their clients, etc.

INDIAN AND EGYPTIAN RESIDENTS IN ENGLISH HOSPITALS.

DR. K. S. BHAT (London) writes: Will you kindly grant me a few lines in your valuable columns to thank the authorities of Paddington Green Children's Hospital for their very candid advertisement in the BRITISH MEDICAL JOURNAL for November 25th, 1916, for applications for the posts of house-physician and house-surgeon there? They say there: "As this hospital is a children's hospital, applications from Indian and Egyptian students will not be entertained." It is certainly gratifying to find some one at least who will say such things out. I am an Indian myself, and happen to be the resident medical officer at the East London Hospital for Children; and the house-physician here is an Indian too. It is beside the point to enter into any comparison between the two hospitals.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.